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# GLEANINGS IN BEE CULTURE

MARCH, 1919



## EDITORIAL

THE SEVERE WINTER LOSSES of 1917-'18 caused the beekeepers of the Northern



### Making a New Bee Cellar.

honey - producing sections to look for a method of wintering which would insure them against a recurrence of such a disaster.

Cellar wintering was one of the methods advocated, and inquiries were coming from many beekeepers asking for plans and advice in building them. In order to give reliable information along this line E. R. Root visited several of the best beekeepers of the United States who had made cellar wintering a success, and a report of this was given in Gleanings for September, 1918. The A. I. Root Co. decided to build a cellar which would incorporate, as far as possible, all of the essential features of the various cellars examined, and which would enable them not only to winter their own bees, but to give first-hand information to the readers of Gleanings. The location selected was in a railroad embankment at the west end of a warehouse. On Oct. 5 a contract was let for its construction, the dimensions to be 12 by 60 feet, and 6½ feet high, inside measurements, a door communicating with the basement of the warehouse at the east, and ventilation provided by an eight-inch tile thru the cover at the west end. The walls were to be of solid concrete 10 inches thick, and the roof 12 inches thick, the latter reinforced with ½-inch steel bars running crosswise every 4 inches and ⅜-inch bars lengthwise every 12 inches.

On Dec. 3 the contractors hauled the last load of soft mud on to the roof. The grading had been started some three weeks before this, but was stopped on account of the heavy rains. It took approximately 100 barrels of water to mix the cement. This, together with the 1½ inches of rainfall which came the latter part of November, combined to make the cellar as wet as water could make it. As soon as the pouring of the cement had been finished, an electric fan was installed in the door opening into the basement of the warehouse, and coke fires were started at several places in the cellar. These were kept running day and night until Dec. 1, at which time the cellar seemed to be well dried out; so the forms were taken down, the room cleaned out, and on

the afternoon of Dec. 6 we began moving the bees in. It was quite cold that morning, but began to get warmer before night; and by noon the following day bees were flying, and we decided to leave the rest of them out until it became colder.

The weather continued mild, and bees were flying every day or two until the 25th, which was quite warm. We opened one of the hives outside and found eggs and young brood. That night it turned cold, and we finished putting the bees in the cellar the following day.

During this time a decided change had taken place in the cellar. The cement, which seemed white and dry 20 days previously, was thoroly saturated with water. Large drops were hanging from the ceiling and trickling down the walls, and the floor was becoming muddy in places. The hydrometer showed about 93 per cent of humidity. This per cent gradually increased. About Jan. 21 a warm drizzling rain set in with heavy fog, and the humidity of the cellar reached 100 per cent. The temperature had gone down to 46, which we considered too low for so damp an atmosphere, so we installed an electric radiator to be used in connection with the fan. This brought the temperature up to 48 in five hours. We have not found it necessary to use the radiator since that time, as the first days of February have been clear and mild. The fan was kept running, and conditions in the cellar improved. The humidity averaged about 85 per cent. We opened a few hives and found considerable moisture, but no indication of mold, and the bees appeared to be in the best condition.

Sudden changes in temperature have very little effect on the cellar. About Jan. 9 the mercury outside dropped nearly 50 degrees in 24 hours, the only cold weather to date, Feb. 10. This did not change the temperature of the cellar one degree. Readings are taken from the recording thermometer every day. Only once has the temperature gone above 49, and then only one degree; 44 is the lowest mark registered, and this only three times. The fresh air is taken from the basement of the warehouse. This is warmed with exhaust steam during the day, but becomes quite cool at night; and at times when the doors are open in loading cars there is often a variation of 15 degrees

in a day in the warehouse, while the average daily variation of the bee-cellar is less than 2 degrees; and the greatest change in any one day was 3 degrees. This goes to show that a uniform temperature may be maintained by having a long narrow cellar with a large amount of wall and roof surface, all of which comes in direct contact with Mother Earth at a depth below the frost-line.

The earth covering our cellar is 5 feet deep at the center, sloping back each way to the level ground, and is 3 feet deep at a point directly over the side walls.

There are 376 full colonies in the cellar, and 18 hives, each of which contains two three-frame nuclei. This does not fill the cellar, as its capacity is 600 colonies.

Up to the present time there has been no disturbance among the bees. We visit the cellar for the purpose of taking the thermometer readings, and stay several minutes looking in at the entrances and noting the general condition. This is done with a flashlight, and scarcely a bee leaves the hives, while the amount of dead bees on the floor has not been more than a quart.



ONE HEARS THE GREETING, "A fine day, Sir," very often in California in spite



"A Fine Day, Sir!"

of the fact that almost every day is a "fine" day, and all days are alike.

The days of cloud in southern California are about as rare as the days of sunshine in the Great Lakes region where the editor came from. What, then is the significance of the remark in this land of perpetual sunshine and fine weather? The editor has figured it out this way: It is a habit acquired from the East, or that part of it where for a month at a time during winter the overcast leaden skies seldom let the sun take even a peek at us. A cracker of Florida once said to us in his native drawl, "The folks heah ah frum evawha else." If that observation fits Florida it is certainly applicable here. Small wonder, then, that tourists (and the towns and cities are full of them) offer the salutation of the East that has some significance back home, but which means little in this land of sunshine.

But as soon as the sun goes down, the temperature begins to drop; and during the night it is cool enough so that two or more bed-blankets are none too much, and a real steam radiator, with real steam in it, is very welcome till old Sol warms things up again.

This naturally brings up California's winter problem and packing. Some of the old-time beekeepers aver that there is no such problem. The editor and some of the very best beekeepers here agree that there is. It is "different" from the one in the East, it is true; but it is here nevertheless. The warm days and the cool nights, going down almost to freezing and sometimes below it,

are hard on the bees. The warm days stimulate the bees to activity. They fly to the fields, gather some pollen, and sometimes a little nectar. Breeding starts. The bees in the single-walled hives try to protect the brood. Some of it chills, and then comes the foul-brood scare. The fine days take a heavy toll on the adult bees, while brood-rearing may or may not replenish the loss. The editor has actually seen colonies go backward. The net result of these warm days and cool nights is an enormous consumption of stores, a reduction in bee force that means unpreparedness for the orange flow in the spring.

Geo. S. Demuth of the Bureau of Entomology, Washington, D. C., in one of his short-course talks, referred to the need of stronger colonies and greater preparedness for the orange flow in the spring. It was his opinion that much greater yields of orange honey, that is always in demand at the highest prices, could be secured if the colonies could be made strong enough at the opening of the flow. Some of the good beekeepers in the State see this, and are getting crops of orange honey. When the winter or spring weather is not too cold, accompanied with light flows of early honey and pollen, the bees will build up so that they are ready for the orange bloom; but when the weather conditions are not right, then is the time that the beekeeper should give his bees a lift. That means windbreaks ample enough to shut off the cold breezes. It also means warmer hives. It is a question whether, with this constantly changing temperature between day and night during winter and spring in California, packing would not pay and pay well. This can be given in various ways—namely, by using outside packing cases that can be removed in the spring, or using a 13- or 20-frame hive. By leaving out four or more frames of the last-mentioned hive, packing could be put into the space made vacant, thus providing side protection. A telescope cover with an inside cover is always much warmer than the cheap single-board covers so commonly used in the State.

M. H. Mendleson of Ventura, one of the pioneer beekeepers of California, and one of the most extensive as well, said he had proved to his own satisfaction that packing, even in California, pays.

May we suggest that some of our California readers try out a few colonies packed alongside of other colonies, of like strength, not packed? See that both the packed and the unpacked are equally well supplied with stores and good queens. If you do not see a marked difference in favor of the packed colonies in point of strength and honey actually taken from the orange bloom, we shall be surprised.

It is our humble opinion—an opinion that is supported by the experts in the Government service, that packing in moderate amounts would be a splendid investment, not only in California but in other tropical and semi-tropical climates.



**T**HIS valley is one of the most productive areas in all the world. The very fact that it has more than 100,000 acres of alfalfa and nearly an equal acreage of cotton makes it a bee paradise indeed. There are between six and seven cuttings of alfalfa a season, with the result that the blooming periods come on at intervals often enough to make the keeping of bees worth while. Since the price of cotton has gone soaring, vast acreages have been grown in the valley during the last two or three years. While cotton is not as good a honey plant as alfalfa in point of quantity, yet one beekeeper has secured 1,000 cases of 120 pounds each from about 1,100 colonies. This was mainly cotton honey. At an average price of 20 cents a pound it would make the gross value of the crop around \$24,000, notwithstanding that not one scintilla of value was taken from the main crop of cotton that was used to help clothe the world during the past great war.

I am told that cotton does not yield honey in all sections of the valley; but that it does yield, and yield heavily in some parts, a good grade of light-colored honey, is very clearly attested by W. W. Culver of Calexico.

I had the pleasure of looking over acre after acre covered solid with bales of cotton. I was told that there were 65,000 bales at an average value of \$125, ready to be shipped. It is indeed a most wonderful exhibit of productiveness of the soil in this valley. If the cotton production continues from year to year, it will mean that Impe-

## IN THE IMPERIAL VALLEY

*The Bee Paradise of California.  
How the Big Beekeepers There  
Carry on Their Business*

By E. R. Root

rial Valley will produce immense quantities of cotton honey. But I learned that as soon as the price of cotton begins to go down the acreage of the plant

in the valley may be very materially decreased because the growing of alfalfa, under normal conditions, is more profitable.

There may be some questions raised as to why I speak of the Imperial Valley as the bee paradise of California. I base my statement on the fact that the relative yield per colony is not only greater in this valley, but that the crop, year in and year out, is almost absolutely sure. In other parts of California the yield per colony will not average above a can of honey, or about 60 pounds. Moreover, the seasons are more or less uncertain. I am referring now particularly to the territory within a hundred miles of Los Angeles.

As we go further north, however, the seasons are more dependable; but I shall have occasion to refer to this in another article.

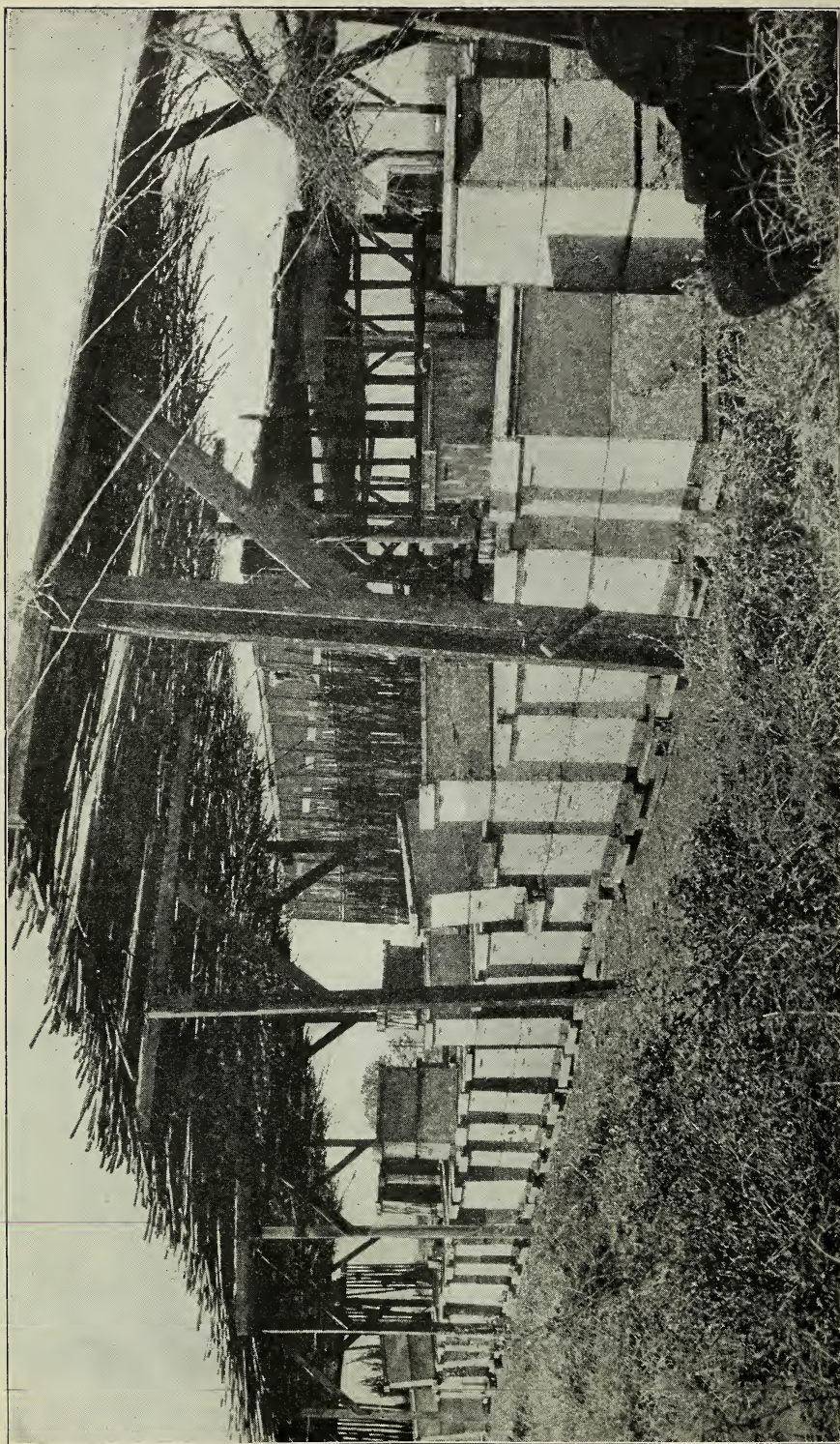
Going back to Imperial Valley, it is but fair to state that a case per colony is considered maximum—the average being, perhaps, about 75 pounds.

The color of the alfalfa honey in the valley ranges from an amber to a light amber; and the flavor, while excellent, is not quite the same as the light-colored alfalfa honey produced in Colorado and Nevada. Why this is so, no one seems to know definitely; but W. W. Culver of Calexico suggested that the difference in flavor may be due to the fact that the alfalfa honey in the valley is modified by other sources.



One of the main irrigating ditches of Imperial Valley. The water contains so much of silt from the Colorado River that the ditches fill up and have to be cleaned out with dredges. This is why the embankment is so high on either side. These main ditches feed the lateral or smaller ditches that irrigate the individual ranches.





Shedded apiary belonging to John Nippert at Imperial. This shows the arrow weed and how it is fastened down by means of wires on the framework. The extracting-house is virtually a screened-in building and is situated between the two lines of sheds, only one of which shows. This apiary was for sale recently at the price of \$20.00 per colony. Mr. Nippert said he could not sell it for less, as the bees actually gave him \$20.00 worth of honey per colony last season, and he has the bees





Unimproved desert land in the Imperial Valley. The soil is so soft and fine that the wind blows it into hillocks around the brush. This land will be made available for cultivation as soon as irrigated.

In case the acreage of cotton should grow less, the acreage of alfalfa will grow more. In that event the yield of honey would probably be increased.

At present there are nearly 600,000 acres under irrigation in the valley. There will be about 300,000 more made available as soon as new irrigation plans are completed. At present there are only a little over 400,000 acres under cultivation, of which about 200,000 are devoted to the growing of plants that yield honey.

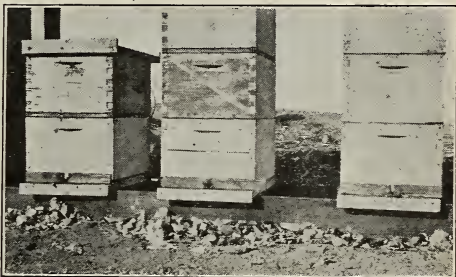
All told, there is something like 15,000 colonies in the valley, with about 50 or 70 beekeepers. It will be readily seen that from this ratio there are very few backlot beekeepers. Most of them are producing honey on a commercial scale.

Practically all of the available bee-ranges are taken up with bees and beekeepers. There is no chance for a new man to come into a territory unless he buys out some beekeeper. I know of only one who will sell

out, and that is only on account of age, the rest of them preferring to stay in the business because it pays to keep bees in this valley.

Foul brood has got a strong hold in the valley. Three years ago the disease was well under control; but it appears that one beekeeper went to the Board of Supervisors and told them that they did not need an inspector, or that they were paying too much for him, with the result that the appropriation was cut almost to nothing, and inspection all but discontinued. Disease, in the mean time, got a strong foothold.

Just before I left I was invited by J. W. George, the pioneer beekeeper of Imperial Valley and one who has done so much to advance the industry, to appear before the Board of Supervisors of the county. Mr. George made the main plea and I followed. He went on to show that the disease was getting a big start in the valley, and that unless something was done at once the hon-



Hives owned by John Nippert at Imperial, Calif. It seems to be the practice during the winter thruout California to contract the entrances of the colonies down to a very narrow space that will admit not more than two or three bees at a time. There are two reasons for this. One is to conserve the heat of the colony, and the other is to check robbing. Most colonies are wintered in two-story hives, one of the stories containing the stores and the other the colony.



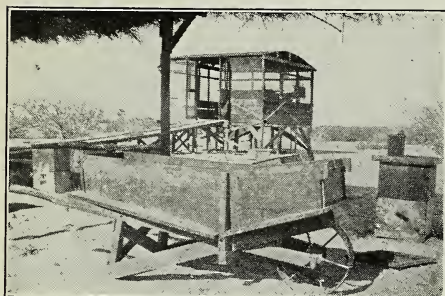
Shedded apiary of W. W. Culver near Calexico, Calif. This is a typical example of a shed covered with arrow weed. Wires placed over the top bind the weed so that it does not blow off. This particular apiary, says the owner, always gives him good yields because it is splendidly protected by the windbreaks of the trees on the north and the east,



Something of an idea of the cotton industry and of the productiveness of the soil can be gained by looking at this picture where there are 65,000 bales of cotton stored in an open field; it rains only about once or twice during the entire year in the valley. This cotton will be shipped before it gets wet down.



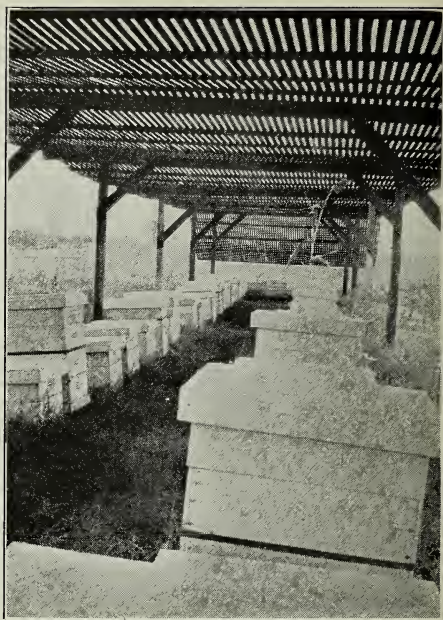
ey resources of the county would be considerably cut down. The Board was asked to appropriate sufficient funds to hire a competent inspector to work for nine months in the year under Mr. George, who had been giving and would give his time, free of



W. W. Culver's handy wheelbarrow for carrying combs from the hives to the extracting-house standing up on stilts, in the background. The shape of the wheelbarrow is so designed that the weight of the combs is thrown forward upon the wheel. Mr. Culver has his extracting-houses off to one side and elevated so that the honey runs by gravity into a large galvanized tank below. He prefers to wheel the honey up an inclined sidewalk to the building where the honey can be run by gravity into the receiving tank.

charge, as chief inspector. The petition was granted and the funds appropriated. There is every reason to believe that foul brood will now be definitely held under control.

From the illustrations given herewith it will be seen that all apiaries, on account of the extreme heat of the summer, must be



Shedded apiary belonging to F. J. Severin at Imperial, Calif. The slats are placed upon a framework and spaced about  $\frac{3}{8}$  inch apart. This arrangement breaks up the rays of sunlight, giving just the right amount of shade and at the same time allowing enough light so the beekeeper can see eggs in the combs. These sheds can easily be taken down and moved to a new location, while the sheds having grass or weeds for the top cannot be moved readily.



One of the apiaries of W. W. Culver situated between two rows of eucalyptus. There is a little too much of shade, probably; and the owner may move the bees and put them under a shed, in which case, he would prefer the lath covering to the arrow weed.



kept under shade. The usual form is a shed covered with dried grass, or what is technically called arrow weed. This shed runs nearly east and west; and during midsummer, with the sun directly overhead, the bees are in the shade from morning till night. During the winter and early spring, the sun, being at a lower angle, strikes the hives all day long at a time of year when it is needed. The arrangement is ideal for hot climates. It is also used in Arizona, New Mexico, and the West Indies.

In place of arrow weed a number of beekeepers of the valley have found that common lath (such as is ordinarily used in plastering) is not only cheaper but better. It is actually cheaper to buy common lath at \$8.00 per thousand than it is to hire a

man, if you can get him, to cut the arrow weed, haul it, and fasten it upon the framework of the shed. As will be seen by the illustrations, the laths are nailed  $\frac{3}{8}$  inch apart upon the frames. This is better than a solid top. When the rays of the sun are broken up it answers the purpose.

J. W. Culver, as will be seen by one of the illustrations, is trying the experiment of putting one apiary between two rows of eucalyptus. He does not believe this will give as good results as the shed.

J. W. George of Imperial, Cal., and W. W. Culver of Calexico, near the Mexican border, are the two leading beekeepers in the valley. Mr. George has been gradually retiring, while Mr. Culver seems to be in the business as much as ever.



OF the four or five months that bees are in the cellar, the month of March is the most destructive to their vitality. This is especial-

ly true if the stores consumed during the winter have been inferior or if the temperature of the cellar during the earlier portion of the winter has been too low. During our earlier experience in cellar wintering we too frequently had both of these conditions in considerable degree, which, in every case, caused some extremely anxious days during the month of March on account of the restlessness of the bees. We have had many colonies that consumed more stores during March than during the entire previous period of confinement in the cellar. This meant, of course, that the bees were burning out their lives rapidly by the extra activity which was induced by their discomfort.

This extra activity serves no useful purpose whatever, and, when once started the destruction of vitality and the consumption of the honey from which the extra energy is derived go merrily on with constant acceleration until the hives are placed on their summer stands and the bees have had a cleansing flight. In such cases the condition of destructive restlessness has overtaken the bees before the arrival of spring.

Some years ago many beekeepers advocated setting the bees out when they became restless, choosing for this a day suitable for a safe cleansing flight, after which they were returned to the cellar. This was intended to stop the rapid destruction of vitality during the latter part of the winter. Fortunately, it is possible by using better stores and keeping the cellar warmer, especially during the early part of winter, to prevent this condition instead of applying

## TAKING BEES FROM CELLAR

*When and How it Should be Done  
for Best Results. Varying Conditions  
Require Varying Treatment*

By Belva M. Demuth

stores in a cold cellar has reason to "Beware the Ides of March," for restless colonies previous to the arrival of spring present a serious problem.

### Restless Colonies Weaken Themselves.

If they are placed on their summer stands at this time, on a day suitable for a cleansing flight, they will quiet down and may still have sufficient vitality left to care for brood to produce bees enough to take their places; but, if the restlessness previous to their removal from the cellar has greatly exhausted their vitality, they may spring dwindle badly and therefore be rendered useless for the season. Their subsequent safety and prosperity depend upon how nearly their vitality has been exhausted before they have had their cleansing flight and the character of the weather after they are set out. If they are left in the cellar, they burn out their lives rapidly by ceaseless and increasing activity. A good cleansing flight stops this useless activity, but we know of no remedy that can restore the exhausted vitality of colonies at this time except brood-rearing. Brood-rearing itself consumes bee life rapidly, and there may not be a sufficient amount of vital energy remaining to apply this remedy in time to save the colony.

### When the Cellar's Usefulness Ends.

Colonies that are but slightly restless during early March may usually be left in the cellar until the arrival of favorable weather and the advent of natural pollen. However, when the time arrives that the bees are wasting their energy in the cellar more rapidly than they would spend it to keep up

a doubtful remedy after it develops. Midwinter flights, therefore, are not now recommended. However, the beekeeper who attempts to

winter on poor

the temperature of the hive out of doors, they should by all means be put out on the first day suitable for a safe flight. The only reason for putting bees in the cellar at all is to conserve their energy, and when it no longer does this they are better out of doors.

Finally, colonies that have wintered well (i. e. have lived slowly) will usually remain quiet thruout March, and even thru the greater portion of April, if they should be left that long. They gradually become more sensitive to higher temperature and stagnant air in the cellar, but are sometimes so quiet that we have hesitated about taking them out even when natural pollen was available.

Thus, while successfully wintered colonies, retaining nearly the full measure of their vital energy of the previous fall, are abundantly able to endure the cold spells of early spring if put out early, their continued quiescence makes it unnecessary to remove them from the cellar until the arrival of more favorable weather. The problems connected with removing the bees from the cellar successfully are much less exacting when they have wintered well than when they have not. The time for setting them out, the character of the day, the importance of immediate flight, and all of the precautionary measures to prevent drifting become less important with better wintering.

#### **Remove Two Months Before Honey Flow.**

We have a few times left such quiet colonies in the cellar as an experiment until late in April, with the idea of escaping all of the disagreeable weather of early spring. We found that they were, on June first, considerably behind the ones removed from the cellar about April first. Our honey flow usually begins about the first of June, so we want every colony ready for business at that time. It seems to require about two months after being removed from the cellar to build up for the honey flow. We, therefore, want our colonies on their summer stands not later than April first in order to have two months of brood-rearing before the beginning of the clover-honey flow. In practice, the bees have usually been put out the latter part of March. They sometimes have to endure some disagreeable weather after being put out; but strong colonies, well wintered, are abundantly able to do this.

This fits in well with the old rule for taking the bees out of the cellar at the time of the blooming of the soft maples. Restless colonies may sometimes be taken out earlier to their advantage, and no colonies should be left in so long that they will have less than two months to build up for the honey flow.

#### **The Drifting Problem.**

We have had almost no trouble from drifting, except one spring when the bees were taken out on an abnormally warm day without the usual preliminary airing of the cellar. The bees rushed out pell-mell without marking their locations and drifted bad-

ly. Ordinarily we leave the cellar door and ventilator wide open during the night previous to setting the bees out. When this is done the bees are quieter and much more easily handled the next day. They are less inclined to fly from the hives while being carried out and are less eager to fly after being placed on the summer stands, thus greatly reducing that first mad rush from the entrance, which is almost sure to be followed by drifting. A wet cloth for closing the entrances of unruly colonies while the hive is being carried out is sometimes needed; but when the bees have wintered well, and the cellar has been thoroly aired the night before, the bees may be carried out without its use. As each hive is placed on its summer stand the entrance is contracted. This, we think, helps to prevent drifting since it restricts their flight. Anything that in any way tends to reduce the volume of flight, when first set out, diminishes the tendency to drift. Good wintering, a thoro airing of the cellar the night before, careful handling of the hives while carrying out to prevent too great a disturbance, and contracting the entrances at the time of placing the hives on their summer stands should prevent any trouble from drifting. We do not attempt to place the hives on the same stands they occupied the previous fall.

#### **Setting Bees Out When Too Cold.**

We formerly waited for a day suitable for immediate flight for setting the bees out, selecting, if possible, a bright warm morning with prospects of a temperature of 60 degrees or more during the middle of the day. The bees were taken out as rapidly as possible in order that all the colonies could have a good flight before evening.

Latterly, however, the bees have been taken directly from the cellar to the outyards on days too cold for them to fly. The entrance screens are put in place while the hives are in the cellar and the loading is done at the cellar door. In this case, it is sometimes several days before a suitable flight day occurs, tho we try to do this on the day preceding a flight day.

This method eliminates much anxiety in trying to choose a suitable day, saves considerable hustle and worry in getting the bees all on their summer stands early in the day, and saves one handling of the hives intended for outyards. It has worked out highly satisfactorily with us when the bees have wintered well, but we would not care to try it on poorly wintered colonies. Well-wintered colonies quiet down after the disturbance of moving and do not attempt to fly until a day suitable for safe flight occurs when they fly normally. We have not been able to detect any evil results when such colonies have been outside a week or more before having their first flight.

Removing the bees from the cellar marks the closing act of wintering. It is but one of a succession of events which began last



August. Its successful performance depends largely upon how each of the others has been done. Colonies that have been properly wintered can be set out on almost any kind of day the latter part of March or first of April, and only the simplest precautions are necessary to prevent drifting. If they

were alike in strength and vigor in September, they should be alike now. How different it is with colonies that have not wintered well! With these the greatest care is necessary at this time, and no amount of skill can retrieve a situation lost earlier in the march of events.



THE subject of larger hives is continually cropping up in our bee journals, and during the last few months has been a noticeable feature

## ANOTHER BIG-HIVE IDEA

*Thirteen - frame Hive for Brood-chamber with Eight-frame Supers.  
Saves Much Time, Work, and Cost*

By Harry Hewitt

in Gleanings and the American Bee Journal. The merits of the long-idea, the 10-frame Dadant, the 10-frame story-and-a-half permanent brood-chamber have all been discussed, and next came the description of Adams & Myers' 13-frame barns.

The size of the hive is probably more a question of location than anything else. In this locality the 8-frame hive is almost universal, and a great many successful apiarists are perfectly satisfied with its use. Personally, I believe that our 8-frame hive with good combs will turn out plenty of bees to handle the majority of flows, and I cannot think that big brood-chambers have as much influence on swarming as is claimed; for I find that colonies where the queen has the run of two and three sets of combs are just as apt to swarm as where the queen is confined to one set with an excluder. My record for the past season also shows that the heaviest yields were from queens confined to eight combs. In this locality it is not always best for our queens to raise a maximum number of bees, for many of our flows are of short duration and are followed by periods of honey dearth. In a normal orange flow it is only the eggs laid during the first week that are of any value in securing the crop, and, should the queens continue laying to their maximum capacity for the succeeding two or three weeks, they will produce an enormous force of bees that will be consumers and not producers during almost the entire period of their field life.

Altho I consider an 8-frame brood-nest ample for the needs of this locality when in the hands of an experienced beekeeper, it has its drawbacks when in the hands of a beginner, for there is the danger of taking away too much honey and allowing the bees to starve. This, however, is always the fault of the man and not of the hive. Another failing, which applies equally to the 10-frame hive, is the difficulty in getting at the brood-nest when it is tiered up three and more stories high. Many colonies are allowed to run down, or are lost for no other

reason than this inaccessibility of the brood-chamber.

I cannot remember for what purpose I made a square hive, 13-frame, about four

years ago; but it has proved its worth to such a degree that my future permanent outyards will be equipped with these 13-frame brood-chambers. Do not think I am inconsistent in adopting this big brood-nest after my remarks about the 8-frame hive, for I am doing it not to give the queen more room but to save time and a great amount of heavy lifting. My object is to stick to the handy 8-frame equipment and at the same time have the immediate accessibility

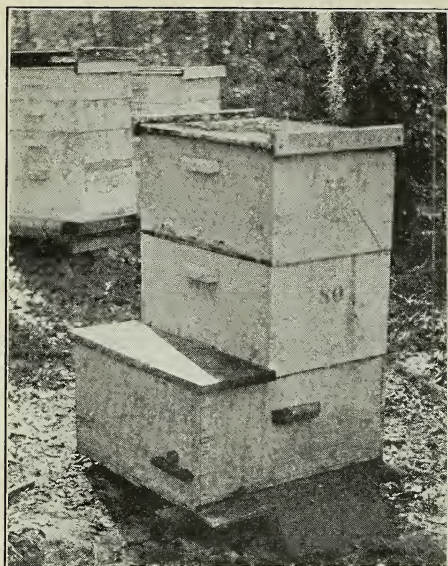


Hewitt's 13-frame brood-chambers with 8-frame supers, showing accessibility when inspecting the colony.

of the brood-chamber enjoyed by the users of the long-idea hive. The photographs show, better than any description, how this is obtained. It is true that only four frames can be taken out and one side of the fifth seen; but these five frames will invariably show the condition of the colony.

This may appear an outlandish shape for a beehive, but its advantages are manifest, and it would solve the problem for those beekeepers who desire a bigger brood-nest, but who are afraid to make the change because the cost would be prohibitive. The only additional cost would be for hive bodies and bottoms, and for the bodies only new rabbeted ends would be necessary.





The Hewitt combination hive, showing cover on brood-chamber and outside view or arrangement for making a queen-mating nucleus.

Altho I speak of the square hive as holding 13 frames (as it will with  $1\frac{3}{8}$ -inch spacing), this becomes such a tight fit when propolis has accumulated that it seems more practical to use only 12 frames and space them  $1\frac{1}{2}$  inches. To cover the exposed frames a piece of  $1 \times 8$  board is all that is necessary, for the bees speedily close up any cracks and make things weather-tight.

In the side of the hive shown in the

photograph, it will be noticed there is a hole closed by a cork above a small alighting-board. This shows another use to which this particular hive has been put. By using a tight-fitting division-board and closing the front entrance to where the partition comes, a two- or three-frame queen-mating nucleus is formed in a few minutes, and the bees and combs are returned to the colony by taking out the division-board when the nucleus is no longer required.

During the last few months many extensive beekeepers have visited my yard and most of them have noticed this big hive; but so far no one has recognized the conveniences to which its odd shape adapts it. All those who commented upon it would prefer to use the same size of supers and so eliminate the only advantage that appeals to me.

The advocates of the Jumbo frame and the story-and-a-half brood-nest lay stress upon the fact that a queen will place her brood in the shape of a sphere, and the deeper frame will allow this to a greater extent than the Langstroth. Altho this may be an advantage for a very short time in early spring, there is no necessity for it when the weather becomes warm and the colony populous. In bee-trees it is quite common to find brood-combs three feet and four feet long and only six or eight inches wide, and some of the swarms raised on such combs are the equal of any produced in a hive. The advantage of the square hive, used in conjunction with the 8-frame supers, will be not only in accessibility—and for outyards where quick inspection trips are desirable this is no small consideration—but in having the same standard frame in both brood-nest and super.



Beekeepers attending the recent California beekeeping short course at the University Farm, Davis, Calif.





## ANNE LESTER AND DADDY LOWE, BEEKEEPERS



By Grace Allen—Chapter II

ONE morning March broke heavily over Daddy Lowe's farm. Wind and storm ruled thru that day, and the next, and the next, dying away at last into little protesting coughs against something young and warm that was coming. And on the fourth day there was blue in the sky and sun over all the earth. Daddy Lowe unbuttoned his overcoat, and walked around the syringa bush to tap on the window of the sitting room. "Come out, Anne!" he shouted.

"Can't, possibly," called a voice behind him. And there was Anne herself with three gay daffodils. "I wandered lonely as a cloud," she began, showing her treasure, "and you accuse me of being inside."

"You weren't among the bees," he protested, "and they're flying."

"Bees aren't the only thing in the world," she declared. "I wanted to see what the storm had done to the daffodils—they were all ready to come out when it struck them. And it hasn't hurt them a bit. Aren't they brave-hearted? That's what I love, Daddy Lowe—not just putting your lips together and being grim, and not being just patient and resigned, but being downright brave, like a daffodil, and when the storm's over, blossoming right on and being what you were meant to be."

"You are very young, Anne," the old man said gently. "That is the right way, but it's the hard way."

"Please don't say that, Daddy Lowe," she begged, as they turned towards the beeyard. "I never could endure that idea. Whatever's the right way ought to be the easy way, once we catch the hang of it."

Daddy Lowe smiled. "Once we catch the hang of it," he repeated, "yes. For that end came all the law and the prophets. Perhaps the poets, too."

"And maybe the daffodils?" insisted Anne gently. Then she stopped. From hive after hive the bees were streaming out into the sun. Their humming seemed suddenly to fill the world. For an instant she stood silent, a new look on her face, then she cried out merrily, "The bees too, Daddy Lowe! I believe this would help people get the little knack of being brave and big and doing the right things easily." Then suddenly, "Ah, now I know—this is how you got it!"

"But I haven't got it," he said, shaking his head. "The bees do help, but I haven't got that little knack! You little child—to call it that!"

"You can't make me angry calling me names on a day like this," she comforted him. "How near dare I go?"

"That's for you to answer," he replied, sitting on a hive. "But it is considered polite as well as discreet not to stand right in their way, in front of the entrances."

So Anne politely sat down on another hive, and for a long time it was very still, except for that one great humming, which is like nothing else in the world. Slowly the listening look deepened in the girl's eyes. But at last she turned to the man. "Daddy Lowe," she said, smiling, "I can see contentment hanging about you like a garment. But there is a bee crawling across my hand. Of course, I am not afraid of him, but how does one get rid of him—most politely?"

"One takes her up by her wings—so," replied the old beekeeper, skillfully taking possession of the bee.

"Her wings?" echoed the girl. "Are these all lady bees?"

"Yes," he replied, "there are no drones at this season."

"From which I deduce that drones are not ladies," she observed.

"Your deduction is correct."

"If I keep on deducing, will I know everything about bees, or are you going to tell me, all in order, like a real story?"

"You have never read Maeterlinck's 'Life of the Bee'?"

"No. I've read 'The Blue Bird' but not the bee. Must I read it, or will you tell me?"

"Well," he began, "in each of these hives, if things are normal, is one queen-mother. She never goes out to the fields, but lays thousands of eggs here in the cells of the combs. Her eggs are like tiny specks of ivory—each in the bottom of a cell—you shall see them later. There are two distinct kinds. One develops into drones, the other into either one of two kinds of females—either queens or workers. These are workers flying around here."

"It takes three days for any of these little eggs to hatch. Then they are tiny white grubs, or larvæ. The worker bees feed them, and they grow so fast that in about six more days they stretch out in their cells, and the workers cover them and leave them there. In about twelve days more, they gnaw their way out, bees. Most of them are these worker bees, undeveloped females whose chief business in life is work. They are the nurses, the housekeepers, the gatherers of nectar and pollen and the defenders of the hive. The males are truly drones, for they don't do any work at all."

"Stackers," scoffed Anne.

"So they are—they neither work nor fight. They are big and coarse and awkward, big eaters, good-natured but not very tidy. Usually there comes a time in late summer when their sisters think there is no longer any chance for any of them to mate with any young princesses, so they just kill them all off—usually by refusing

to let them in when they come home from some frolic out in the sun. So end most of the drones. That's why there aren't any this time of year."

"How can the same kind of egg make either a queen or a worker?"

"I wish I knew. Which they become seems to depend upon the food given to the larvæ. Most of them, oh, by far the most of them, develop into workers, but when the bees decide to raise queens, the food administration changes its regulations. They make the cells larger where the queens are to be—and when they finally come out they are beautiful, long and slim and golden."

"Have they wings?"

"Oh yes, wings like gauze, but strong and swift."

"Well, if they never fly out, I don't see—"

"They do fly out. When the young queen is about a week old, she takes her wedding flight. But after that she stays quietly in the dark hive, laying thousands and thousands of eggs, and practically never leaves the hive again, unless with a swarm."

"I know about swarms—they all go off and live in a hollow tree."

"Sometimes."

"Why do they go?"

"Usually because they have so many children they don't know what to do. So part of them, including the queen, move out."

"Then those that are left haven't any queen."

"They always leave young princesses in cells, ready to emerge soon."

"I see. Then they hatch out and there are plenty of queens. And is there anything else?"

"Well, there are a few details left! For instance, when those 'plenty of queens' hatch, either the first one kills the others, or they fight to the death, or the workers kill them—anyway, they have only one in each hive."

"Please don't tell me those queens fight! It does seem as tho queens really might be 'too proud to fight'. How much fight and struggle and killing there is in this world!"

She slid off her hive. "Oh, look at all these dead bees, in front, here!" she cried.

"And see the live ones dragging the dead ones out?"

"Yes, and there too! What makes them die?"

"Old age and weariness. They had to work pretty hard during the winter to keep warm. That wore out some of them, and some of them were old enough to die, anyway."

"How old are they when they're old enough to die?"

"Fall and winter bees live several months, some of them on into the spring. Summer bees wear themselves out in about six weeks."

Anne sighed. "This is a lovely world, but there's an awful lot of sadness in it."

They walked off together, slow and serious. "Where do you suppose our soldier boys are now?" she asked presently. "And what are they doing? Are they both still all right? And how soon will we hear from them again?"

The old man shook his head. "There is one thing absolutely certain about war, Anne," he replied quietly, "and that is that the ones at home will ask such questions a thousand times before they are able to answer them. Our part seems to be patience and resignation," he added, smiling.

"Well," she laughed, "I don't mean to criticise patience. Patience is all right when it's big and strong and fine—but I honestly despise what some people call patience. Half the time it's nothing but lack of spirit and grit. As for resignation, the word somehow gets on my nerves. It's not big enough. Whatever comes to me, I do hope I'll always be something bigger than just resigned."

Mrs. Lowe met them at the door. "A letter from Jack, Father!" she exclaimed happily. "I haven't quite worn it out reading it. He's in France somewhere. You have one too, Anne dear."

"Did he say anything about Robert?" Anne asked, seeing her own letter was not from her brother.

"He was still in England, the last Jack knew," Mrs. Lowe replied. "Too bad they couldn't have stayed together."

Anne eyed her letter suspiciously, then laid it aside. She opened it a little later, in her room. "O dear!" she exclaimed, flushed and embarrassed, after she had read it. "Now what do I do next?"

Neither the furniture nor the letter told her. "I know what I'm going to say," she explained to the silence, "but I don't know how to say it."

That evening, after many efforts, she finally evolved what seemed to satisfy her. "Now, Mr. Theodore Robinson, please, please, don't let me hear from you again," she remarked as she addressed the envelope. Then she drew the letter out to read once more. This is what she read:

"My dear Theodore: You are utterly mistaken. I was not torn away from home. I came here because I wanted to. And it's not a desert. It's a lovely farm, with little hills around the edges. I love it. There are bees here too, workers and queens and sure-enough drones, and bits of ivory eggs that turn into chubby white worms and then get wings and fly out and hum. I hate city noises, but this gets into your soul. I am always going to live in the country, where there are bees and daffodils and old men. So you see I can't very well marry you, Theodore. Please forget that you asked me. With best wishes, your friend, Anne Lester."



(To be Continued.)

G. A.





## IS IT A SAFE PRACTICE?

### Two Beekeepers Who Do Not Approve Kight's Foul Brood Treatment

On page 21 of the January issue of *Gleanings* appears an article under the title, "Is it a safe practice?" The article describes what is called "the nursery method" of treating a "mild" case of American Foul Brood. Now, Mr. Editor, I am one of those "foul-brood inspectors" (we call them inspectors of apiaries out here in California) who does, most emphatically, question this "method of cure." I disapprove for the following reasons:

(1.) The method is in opposition to all the accepted scientific data we possess in regard to American foul brood. These data have been accumulated thru many years of the most careful and painstaking study and experimentation on the part of both scientific and practical beekeepers. Suppose it be granted, for the sake of the argument, that "some good beekeepers have tried the method with excellent results." I would answer that statement with the Editor's own words: "It is probably true that the disease may appear in some other combs." Is not that statement, in itself, enough to convince anyone that the method is unreliable?

A method that does not certainly eradicate disease, is not, and cannot justly be called, a cure.

Picture in your mind the condition of affairs that would exist in the apiary of the average beekeeper who tries to treat American foul brood according to this method. If it is a genuine case of American foul brood, even tho only a few cells appear, there is no doubt but that other combs will show the disease sooner or later. These combs will have to be looked for, found, and treated. The process must go on until the last vestige of the disease has been eradicated. The method of treatment resolves itself, finally, into a continuous performance in which, instead of eradicating the disease, the beekeeper is engaged in juggling diseased combs and colonies in the midst of a more or less healthy apiary.

(2.) My second objection for disapproving even the publicity of such a method of treatment of American foul brood is, that it tends to lessen the sense of danger and dread of the disease that should always exist in the minds of all beekeepers.

There are entirely too many beekeepers who treat the matter of brood diseases lightly. The author's views of the details of this method of treatment are bound to create, or encourage, the belief that foul-brood infection is not as contagious as careful inspectors say it is.

What is still worse; Mr. Kight's published endorsement of such unscientific methods tends to increase the number of those who are willing to hazard their own and their neighbor's interest for the sake of a doubtful experiment. If one man can try his little scheme of treatment and get by with it, why should not an inspector let every Tom, Dick, and Harry tinker with disease to his heart's content?

What is needed, in order to rid the country of the scourge of foul brood, is a wholesome dread of the infection—a dread that will prevent any such tinkering with disease as described in the article referred to.

(3.) My third reason for disagreement is found in the statement of the editorial note as to the people who are most likely to be benefited or injured by this publication. In my humble opinion, the "careless man" is the very fellow who is most likely to try the method. "The 'careful man'" will not try the method at all! Perhaps this is but the statement of personal opinion; in which case, the opinion of the authorities in bee culture would naturally outweigh that of a mere "foul-brood inspector." But if the opinion of an inspector is worth anything, it seems to me that it should be uttered in favor of more drastic treatment of all brood diseases; and that all temporizing, and much of the experimenting that is done, should be eliminated. The danger is not confined to the apiary that it infected, but menaces all the bees in the country.

Whoever called this treatment of American foul brood "the nursery method" is to be congratulated on his choice of a name. It is, without doubt, a nursery of the disease.

Robert B. McCain.

Inspector of Apiaries for Santa Barbara County, Calif.

An article entitled "Is It a Safe Practice?" telling of the mild cure for American foul brood, appeared in the January issue, page 21. May I venture to say from experience that it is not safe without one or two qualifications. Either the treatment should be employed only during a good honey flow, or else the diseased brood should be removed entirely from the flying range of the bees treated. With either of these conditions supplied one can effect a considerable saving by using this plan, provided you figure foul brood is with you, like "poor relations," to stay, and the effort is merely to keep it in check.

Here's a tip on foul brood that's worth remembering: If you are sufficiently afraid of it, it will not be liable to hurt you much; and just about the time you lose your fear of it, you are liable to get a pretty good jolt.

I decided once that I was not afraid of

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it any longer; so I stacked shook foul-brood combs in the same apiary with the treated bees, leaving enough nurse bees to look after the brood. This was during a brood-rearing honey flow, with a one-bee-way entrance. Shook bees will work almost like a new swarm, but they are much worse to rob. There were a few field bees left with the diseased combs that went back to the old locations, and evidently they did some robbing on the practically defenceless brood for some time. I had recurrences for a year thereafter. Now I have as much respect for foul brood as I ever did have, and a bit more of late, and I find I am not getting hurt much by it any more.

My location is almost isolated. I've cleaned up two yards entirely—not a cell for over two years. In the other two I have it down to less than 5 per cent. I would rather dig a hole and bury at night the whole blamed hive, bees and all, than take any kind of a chance of its spreading or recurring, for those two yards must be cleaned up, **entirely**.

But, now, if I had disease all around me and some thruout my own bees, I would certainly use this method—but only in a good honey flow, unless I could start a hospital yard at a safe distance. I know what it's like to melt up a strong two- or three-story colony. But even so, I believe it safer, and I doubt the advisability of Mr. Kight's treatment for more than about one beekeeper in fifty.

T. W. Riggs.

Overton, Nev.

### Mr. Kight Takes Exception to Mr. Holtermann's Comment.

On page 98 of February Gleanings, R. F. Holtermann says, "there are altogether too many beekeepers who now try to cure American foul brood that way." This was said in criticism of my article, page 21, January Gleanings, on the treatment of American foul brood. This criticism is an injustice both to the readers of Gleanings and myself, for the reason that he evades the main points at issue by talking about the "cut out" method when one can see that the nursery or hospital method was the treatment advanced. The cut-out method was mentioned only in the first paragraph of that article as being successful in one instance where the cells that were diseased were cut out. I would use the cut-out method only where there were but a cell or two that had American foul brood and confined to but one comb. If I had more than one hive diseased, no matter how limited, I would adopt the nursery method absolutely.

In reading Mr. Holtermann's criticism of my treatment and his brimstone method, one is led to believe he would advocate the extreme method in the cure of any contagious disease, whether in bees (or human beings).

Going back to the cut-out method that Mr. Holtermann talks about, I wonder what would be his advice to the surgeon should one of his family show symptoms of cancer in a leg or arm or any other part of the body where it could be reached with the knife; would he suggest to cut it out or cut the patient's head off as a sure means of eradication?

There are many things about the honey-bee to be learned, and I know of no better way than to experiment and adopt the methods most successful with the least possible loss.

J. F. Kight.

Indianapolis, Ind.

### "GOING AHEAD BACKWARDS"

#### That's What a Big New York Beekeeper Says of Home Breeding of Queens

The extension workers of the U. S. Department of Entomology as well as many other educators in apiculture are urging beekeepers to rear their own queens rather than to buy them of the men who have been and are making a specialty of queen-rearing. Such stuff is not going to get us very far. For however advisable it may be for the beekeeper to raise his own queens, there is not one in three hundred capable of selecting stock whose progeny will maintain to any degree the qualities for which it was originally selected.

The rank and file of farmer beekeepers, whom the extension workers are trying to induce to "keep more bees," are, to say the least, not anxious to spend any money on their bees for good queens or anything else, and they are the ones who are going to bite, and rear their own queens because it is cheaper.

To raise good queens requires not only skill on the part of the beekeeper but also very favorable local conditions—conditions other than we have in western New York. The firm of which I am a member has spent hundreds of dollars in buying queens not only for their own use but also for improving the surrounding locality by giving queens to near neighbors and selling at reduced prices to those more distant and many times donating their own time for requeening. This has been practiced over ten years, and still we are unable to secure pure mating of one-tenth of the queens we rear for our own use. These mismatched queens will often produce colonies that will outdo their ancestors, it is true; but were it not for the purchasing of two well-bred queens to each of these home-bred ones we would soon be out of the bee business, so far as honey production is concerned, for when it comes to the second- and the third generations of these home-bred queens they are worthless.

We are still buying queens by the hundred



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and will continue to do so until conditions are much changed.

If beekeepers generally adopt this system of rearing their own queens, in less than five years we shall be back to where we started 25 or 30 years ago. Howard M. Myers.

Ransomville, N. Y.

[There are a great many "farmer beekeepers" who own quite a number of colonies, and who do not feel that they can afford to buy queens for their entire apiary. These people may be capable of rearing queens quite successfully; and I believe that it is much better for them to purchase one queen of good stock to use as a breeder, and raise their own queens, than to allow the bees to requeen themselves year after year, as is often the case. While these home-bred queens are likely to be largely mismated, they are enough better than the third or fourth generation of hybrids so that it will pay well to raise them.—Mel Pritchard.]

### ANOTHER KIND OF WINDBREAK

Cornstalks Threaded in the Meshes of Woven Wire Do the Trick

During the past year the value of a windbreak has been so strongly presented both by beekeepers and our Government experts,

that I have been convinced of the necessity for one as a protection for any bee-yard. I had been thinking about windbreaks for five years or more and had planned one such as I would build, if I ever had occasion to

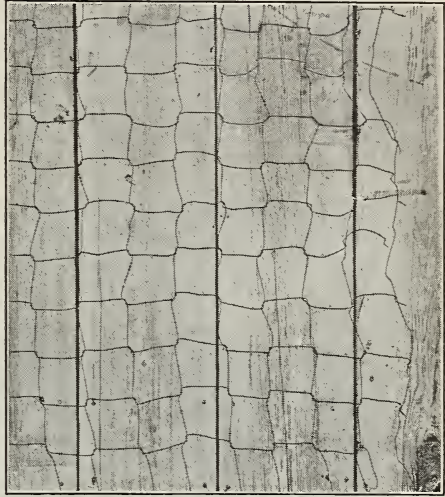


Fig. 3.—The kind of wire fencing used in making the cornstalk-fence windbreak.

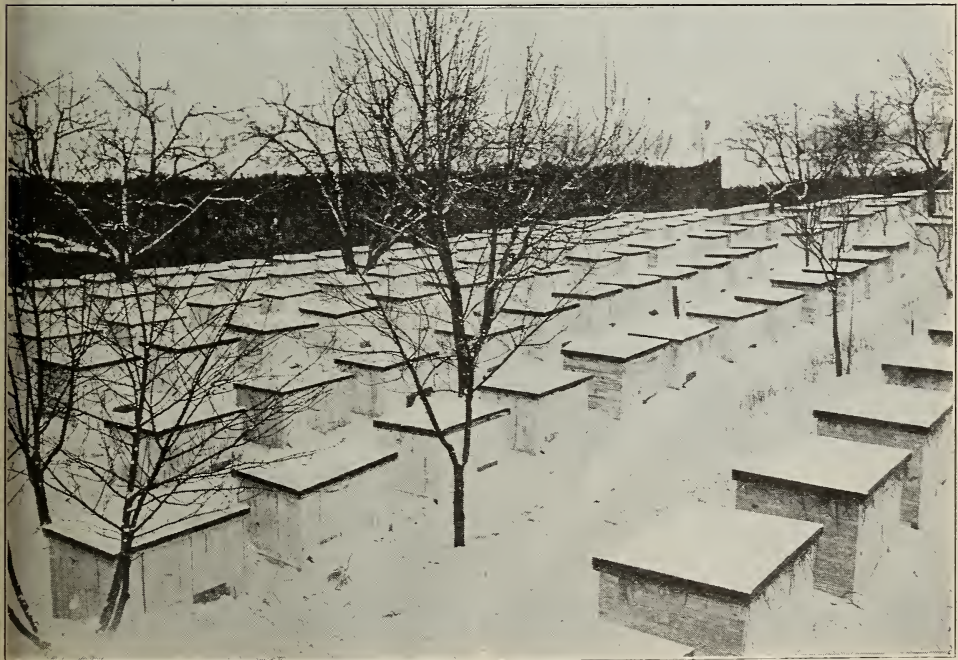


Fig. 1.—View of Mr. Hassinger's apiary showing cornstalk-fence windbreak of different heights on two sides.



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use one. The idea was to build an ordinary woven-wire fence and to thread cornstalks or sugar-cane stalks thru the wires, threading closely enough together to break the wind without diverting it on to parts of the yard as a solid fence will do. Part or all of the stalks could be easily removed during hot weather, if desired, and later replaced.

I have built such a fence about my apiary for protection this winter, as shown by the photographs. It may be considered experimental and too young to crow about. However, the fence is cheap, and no one can lose much if it proves to be a failure. It is cheaper than a board fence, and it seems as

tho it must answer the purpose much better. It should also be more effective than an evergreen windbreak. It is there or not there, as you wish, and it is not taking the fertility from the soil, which may be of greater use in growing food products. It is a long wait, also, for the twenty-odd years' growth required by the evergreens. The stalk windbreak requires but little space and is not bad-looking, as the photographs show. If it is to be more permanent, grapevines, ivy, or morning glories may be planted and allowed to run up the fence, to add to its beauty.

Photos tell the story better than words.

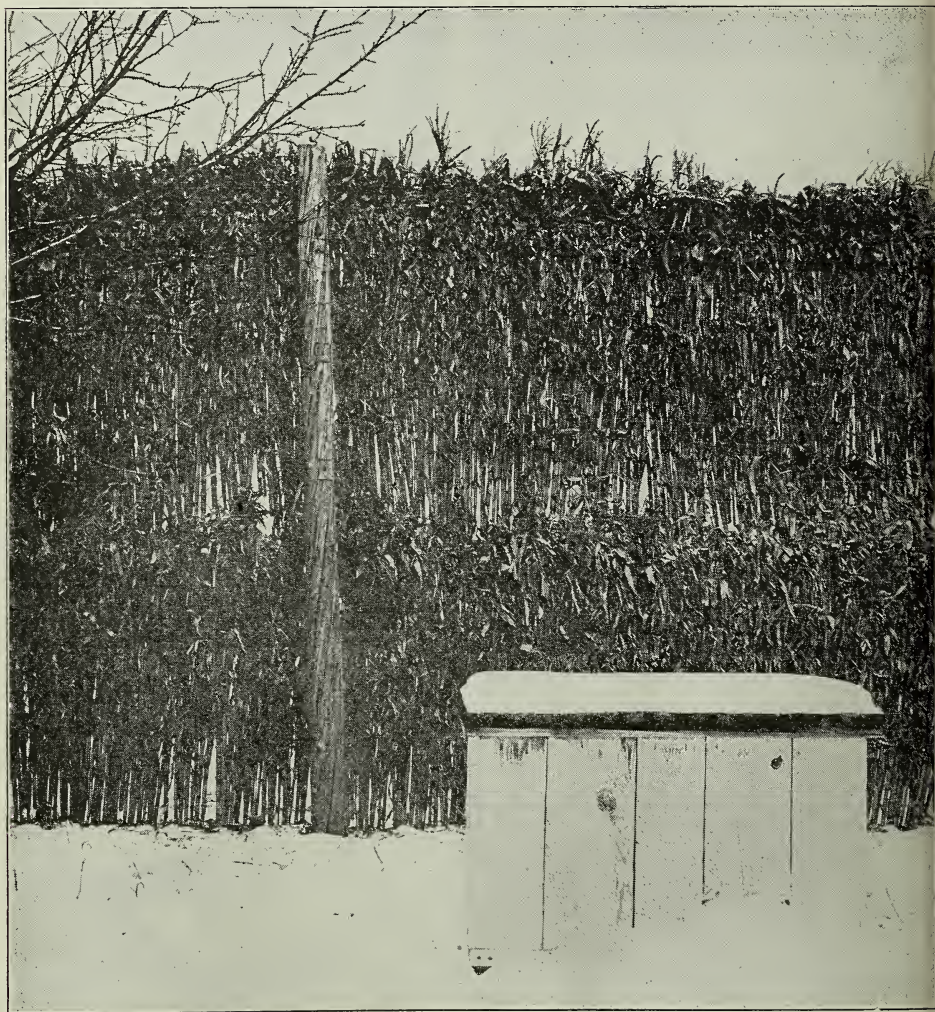


Fig. 2.—Hassinger's 12-foot-high windbreak, made by using two widths of 6-foot wire fence, one above the other, and two lengths of cornstalks threaded into the wire.



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Figure 1 shows in the background the six-foot fence on the south and the east sides of the yard as well as the twelve-foot fence on the north and the west. Figure 2 shows the fence, which is 12 feet high on the north and the west sides of the bee-yard. The stalks were threaded into the wire from the outside between two wires near the top, one in the center, and two near the bottom, as a close view of figure 2 will show. The 12-foot fence consists of a double width of six-foot wire and two lengths of cornstalks.

Perhaps almost any kind of woven netting would answer the purpose, but figure 3 shows a close view of the kind I used. Notice the twist, the nature of which is such that there is plenty of slack to press the wires and to make room between them thru which to pass the stalks. The wire was listed as poultry and rabbit netting by a mail-order house. Wire six feet high, heavy grade, comes in ten-rod bales at 66 cents per rod. The space between the wires is  $1\frac{1}{8}$  inches at the bottom and  $4\frac{1}{4}$  inches at the top. With this wire the stalks are easy to thread. The wire plus the labor and stalks and second-hand telephone poles at 70 cents each made me a cheap windbreak.

Edward Hassinger, Jr.

Hortonville, Wis.

### QUEEN-REARING—DOES IT PAY?

Perhaps Not in Dollars, but in Acquirement of Bee Lore It Does

Since no method has yet been discovered whereby nectar can be gathered and converted into honey by machinery, man has concluded that the life and prosperity of a hive depend upon a virile and protected motherhood. Otherwise, worker bees, which already are carrying pollen and nectar in loads many times their own weight, making wax, building cells, nursing younger sister bees, and doing military duty, would no doubt be spending their odd moments in reproducing the species.

Artificial queen-rearing, like other stock-raising pursuits, is only another version of making two blades of grass grow where only one grew before, with the additional object of improving the stock by breeding only from the finest strains. Therefore, when the new firm of beekeepers became established, an Italian breeding queen was purchased from which to requeen the apiary and to provide queens for prospective new colonies.

Of the 415 cells grafted, 109 were capped or accepted. Of these, 20 failed to hatch, and were found, fully developed, dead in the cells. Of the 89 that did hatch, only 36, less than half, mated and began laying. The other 53 virgins were lost, presumably on their nuptial flights, the majority proba-

bly being ambuscaded en route by yellow-jackets, which increased to an army more and more formidable as the season advanced. The voracious insects became a pest in dwelling-houses, and a menace even to pet animals—dogs and cats often being deprived of their rations by a sudden visitation of the yellow peril, which, without a by-your-leave, would swarm over the food and carry off the meaty portions. Against such an enemy the virgin queen is defenseless—six veteran bees, according to the observations of a statistically inclined beekeeper, being required to vanquish one yellow-jacket. The beekeepers of England, especially near London, are said by those familiar with apiculture in that country, to suffer greatly from losses caused by the yellow-jacket pest.

A total of 36 queens, altho a small result for a season's work, and only  $33\frac{1}{3}$  per cent of the 109 cells capped, and 8 per cent of the total number of cells grafted, was still a sufficient number to requeen their small apiary, had not fresh disasters, not mentioned in the books, befallen them. At the end of the season, artificially reared queens in hives and nuclei numbered only 28, the other 8 queens having met their death during the delicate operations of caging and introduction; 2 died in cages, together with their attendants, while in transit from nuclei to their permanent homes in regular hives. An inquest was held. "Sun-stroke" was the verdict, based on the expert testimony of a beeman who learned that the cages had been exposed to the sun during the short time necessary to open the hives and spread the frames preparatory to introducing the queens. There being no other logical explanation, the verdict was accepted.

But the same expert had nothing definite to offer when a beautiful golden queen was found lying dead in front of a hive two days after introduction. He said that bees would sometimes release a queen by eating thru the candy, and then execute her; but he could offer no satisfactory explanation for such conduct. A few days later another queen met the same fate, and the hive was finally requeened only by giving to it a frame of brood from which the colony produced a queen more to their liking.

Beginners are more or less prepared by reading for the eccentricities of royalty. "The books say" that young queens often return to the wrong hives after their mating-flights, and that others are nervous and restless when the hive is opened for inspection; but no account of a queen emerging from a hive at one end of a row and returning to the hive at the extreme other end, as the first young queen did, has ever been noted in literature. There were 19 hives in a row. In hive No. 1 the queen was due to begin laying, and the frames were inspected for eggs. None was found, and a diligent



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search failed to locate the queen. In hive No. 19, queen-cells had been placed only a few days before. These were intact, altho a fine mature Italian queen was in full possession of the hive. All our other hives, with the exception of No. 1, being either queenright or supplied with cells not yet ripe for hatching, it was evident that the queen on her nuptial flight remembered that her hive was situated at the end of the row, but had neglected to make a memorandum as to which end of the row it stood. Matters were evened up by removing from hive No. 19 the frame of brood containing the queen-cells to hive No. 1, left queenless because of its young queen's defective bump of location.

Again, the books say that a queen begins to lay in from five to ten days after mating, and that if delayed beyond that time she is likely to become a drone-layer. This particular queen waited three weeks. She then filled her hive in an amazingly short time, and, following a second call to adventure, swarmed out in August, three months after she was discovered to be in the wrong hive. Unfortunately the swarm was lost and with it the closing chapter of the queen's life history.

The history of hive No. 1 was no less turbulent. The bees would have none of the strange queen-cells from No. 19, but proceeded against them with systematic destruction. When the lower part of one of the cells (the part next the comb) was eaten away, a worker bee was seen to sting the exposed abdomen of a virgin queen which was struggling to free herself, but whose head was still imprisoned in the unbroken tip of the cell. We then introduced cells in wire protectors, but in each instance the queen would mysteriously disappear. Meanwhile, laying workers developed. The frames containing the brood were judiciously distributed among the strong colonies of the apiary, on the theory that the laying workers would remain with the brood and so be overpowered by the bees in the stronger colony in which they were placed. After a three-months' struggle the hive was successfully queened.

Three cases of balling were experienced. One queen managed to disentangle herself; and, the cover being off the hive, she flew away. Whether or not it was her nuptial flight is not known. At any rate, on the next visit she had returned to the hive and eventually became the mother of a large colony. The two other queens were rescued and placed in nuclei (by introducing in the usual manner) in order that they might have every chance of recovery. One died, and the other degenerated into a drone-layer.

Estimated strictly in terms of dollars and cents, no one could possibly figure a profit on the firm's first season in queen-rearing.

The hard-headed business man would say to a beginner, "Buy tested queens from a reliable breeder, and save money and time."

But the new firm is neither hard-headed nor businesslike. Indeed the individuals who compose it have scarcely enough sand between them to dethrone a reigning queen, no matter how black or otherwise undesirable she may be, to make room for one of their own new queens.

As to business, however, the ambition of the firm to master the technicalities of beekeeping outweighs even the very human desire for immediate monetary returns; and for one who would learn quickly the handling of frames, the control of strong colonies, the wonder of their busy existence, the habits and the intimate family life of the bee, artificial queen-rearing is the shortest and surest route. C. D. Stuart.

Los Gatos, Calif.



### HOW HE BEGAN BEEKEEPING

#### A Naive Statement of a Beginner's Surprises and Experiences

Year before last, a swarm of bees alighted on a lumber truck near where I was working. One of the men took a soap box and set it under the swarm, picked up one end of the truck, slammed it down, and right there my beekeeping started.

Just four days after this, another swarm alighted within a hundred feet of me while eating my lunch at noon. In five minutes I had them in another box. Now, I had always wanted to keep bees, but I did not know what to do with my captives. I looked at the pictures in the books. How was I to get those little square boxes on to that hive? Finally, I got a beeman to look them over. "Oh," said he, "you must get a hive and dump them out into it."

Now, that was a stickler; but I wanted those bees, and so I sent to town for a hive and got it. Those bees had been in the old boxes for seven days. Then it was that the fun started. I got a woolen blanket, and then pulled off the board top. About half a bushel of bees hung to the top. I was surprised to get about 50 stings, but was bound to get the bees. I did not know a thing about the queen. All this happened about 6:30 in the evening. After dumping out the bees, I left them on the ground. In the morning they were still clustered around that new hive, refusing to go inside. I told the beeman about them, and he asked: "Did you put the queen in the hive?" I replied: "Queen be hanged! What is the queen?" He said: "You must get the queen. She is a large bee, the boss of the hive, and put her in the hive."

Well, when the whistle blew that evening I hurried home. The bees were still bunch-



## FROM THE FIELD OF EXPERIENCE

ed up on the hive. "Now for the queen," said I, and began pawing the bees over, getting a few more stings to help out. At last I caught her. It was easy to recognize her. I put her in the hive, but did not know enough to clip her wings. I thought that all I had to do was to put her in and the rest would follow. No. I gathered up all that I could and put them into the hive and went to supper and then to bed. Next morning I did not look at them before going to work. At night I hurried home and went straight to the new hive and lifted the cover very carefully, and, lo! there was not a bee inside. All were gone.

Well, I took up the blanket and felt very wretched over the loss. I kicked the hive and then sat on it and began to think. My soap boxes were working with a will. Would I try to put them in the new hive? I would not. They would stay where they were. In fact, I did not know what to do, and so I hunted up another beeman. Now, do not think badly of these beemen in this neck of the woods. Maybe they are all right. This one advised me to let the bees fill the box with honey and then kill them.

Kill those bees after they had filled the box! Well, I guess not! This beeman went away without my blessing. When he told me to kill those bees I took my jackknife and worked around the cover of that soap box, and when I got it open I found that those bees had a comb started diagonally across the box hive. I lifted it a little more very gently, when one slammed a sting into my nose. So I let the lid down and got my saw and cut into that cover very slowly and carefully. Not a bee made a move. It took me 20 minutes to do the sawing; but I was well paid for my time. I took the inside measure and made three frames and slipped them into the box. Three weeks later those frames were solid comb and honey.

Kill my soap boxers, Mr. Beeman? I guess not.

I like to get advice, but I do not always take it to keep. I am now making some 12-frame hives for next year. I now have five colonies, but one of them is hybrid.

In this locality bees work on maple blossoms, fruit bloom, bull thistles, and fireweed. There is some clover here, but not much.

Ed. C. Hemp.

Snoqualmie Falls, Wash.

### WHAT KIND OF BIG HIVE—IF?

#### A Californian View of the Tendency Toward Bigger Hives

The hive question, it seems, is one that will never down. Beginners are prone to seek a hive that will prevent swarming, but it is doubtful if any such hive will ever be found without encountering greater incon-

veniences than swarming itself. The beginner who tries a new hive will have about 999 chances out of 1,000 to be wrong.

It is claimed that there is a tendency in the direction of the twelve- and thirteen-frame Langstroth hives. Now, I have 200 20 x 20 or thirteen-frame hives in my apiary, and I wish that I did not have one of them. They are too big—too large to handle, and too large for the average queen. Three years ago I got these hives and put 100 of my best colonies in them, and found that only four or five queens were capable of keeping such hives filled with brood. None of these queens was two years old. Moreover, I selected the best 100 out of 300 colonies to transfer to the large hives. A few of the queens used only eight combs, the average number of combs being from 9½ to 10. Of course these combs were all worker. The queens will use more if there is much drone comb in the hive. With these large hives, supers the same size, and a queen-excluder on, but with suitable arrangement for ventilation and plenty of empty comb above and below, about 25 per cent of those colonies swarmed. They also after-swarmed as much as colonies in small hives. The size of the hive, however, does have something to do with swarming, for they will swarm worse from eight-frame hives than from hives of ten or twelve frames.

The eight-frame hive has lost out entirely. I would not accept eight-frame hives as a gift if I had the money to buy the ten-frame size. But while we have gone from the eight-frame to the ten-frame hive, I think there is much doubt whether the twelve-frame is better than the ten-frame. We can prevent swarming to a great extent by using the ten-frame hive three high in operating for extracted honey, provided we work without queen-excluders—at least the excluders must be out of the way until the approach of the harvest. I know to a certainty that bees are much more given to swarming with the queen-excluders on in the early spring; and, so far as swarming is concerned, it would be advantageous to use no queen-excluders. But I prefer to use them except in early spring, for I think their value outweighs their disadvantages.

It is quite possible that the Jumbo ten-frame hive has advantages over the standard ten-frame size, but the regular Langstroth frame seems to be about right. Nevertheless, if we ever change to another style, it certainly should be larger and not smaller than the Langstroth. Small frames are an absolute nuisance at the time of extracting. It is my belief that we should be very careful about changing from the standard ten-frame Langstroth hive; but if we do change it should be to the Jumbo ten-frame hive, with the frames wired about every 1½ inches to hold the foundation.

Piru, Cal.

Chas. A. Brown.

THAT'S a good editorial, page 74, February Gleanings, the gist of which is that a man should not advertise beyond his ability to

perform. On the side a point is brought out that is worth considering. A has advertised, is flooded with orders, and turns to B, from whom he buys to help out. Evidently B has not advertised, and the question is whether it would not have been better, at least for B and the customer, if B had advertised and shipped directly to the customer, instead of sending thru A.

\* \* \*

Yes, as said in print beneath the picture on page 76, the dress of those four "ettes" is "sane and safe," and, it might be added, very sensible. Yet the "eternal feminine" is still there, as you can see by the one sitting down. Her hands are saying, plainly as can be, "Is my hat on straight?"

\* \* \*

Speaking of some of the California bee-ranges, you say, Mr. Editor, page 75, "These ranges of sage and wild buckwheat will never be good for anything but bees." In this day and generation, that statement is just a bit reckless. It would be nothing astonishing if something undreamed of should turn up, making that land valuable away beyond its value for bees, and who knows but beekeepers may be the pioneers in opening up those unexpected values?

\* \* \*

Speaking of overstocked territory in California, you say, Mr. Editor, page 75, "there should be a law to stop the encroachments of poachers." Aren't you getting a bit reckless? I knew a man who once got into all sorts of trouble for advocating that a beekeeper should have a legal as well as a moral right to his territory. And yet, will some one please arise and explain why a man should have such a right in New Zealand and not in this country? Also why it should not be that a man is just as secure in the bee business as in the cattle business.

\* \* \*

As to that account, on page 104, of a man selling 22-cent honey at 6 cents for local consumption, likely not many of us have really learned yet that "it is more blessed to give than to receive"; yet the war, with its drives for Red Cross and other things, has helped quite a bit. Even the churches are, as a rule, away in the background. The amount raised for benevolence is only a small part of that raised for local expenses, when in most cases it should be on at least a 50-50 basis. All that does not make selling 22-cent honey to neighbors at 6 cents an example worthy of imitation. As a business

## STRAY STRAWS

Dr. C. C. Miller

proposition it's rotten, and I doubt the morality of it. When Mr. Foss sold honey worth \$1,760 for \$480, he gave away \$1,280. An excellent thing, if he

could afford it, and the charity was judiciously bestowed. But by what sort of right did he give any of that money to those of his neighbors who were better off than he, "when the world is overwhelmed with suffering" and thousands upon thousands are starving? Can he look squarely in the eye at the last those starving Armenians and others?

\* \* \*

Prohibition promises to prove such an important factor in the national life of America that it ought to add at the very least 10 per cent to the intrinsic value of the stocks and bonds dealt in by Wall Street.

There is no individual business in which it cannot be proved that great special good will result from abolition of the liquor traffic.

That's not copied from a Prohibition paper, but from a cold-blooded financial letter in a Chicago daily that up to now has advocated the use of beer and wine to prevent the consumption of stronger alcoholic drinks!

\* \* \*

E. J. Ladd has sent the following quotation from the excellent book of Dr. Henry Lindlahr, 'Nature Cure and the A B C of Natural Dietetics':

Prominent chemists have discovered that foods contain in various chemical forms, and in exceedingly small proportions, certain substances which they have called "vitamines" \* \* \* meaning "living substance." It is assumed that these vitamins are molecules highly charged with vital energy, the essential element in nutrition.

The discoverers of "vitamines" have found that boiling destroys a great many of these highly organized substances and that temperatures higher than the boiling point kill most of them. It has been proved that animals will die of starvation when fed exclusively on foods in which the vitamins have been destroyed.

Vitamines, the carriers of the life elements, are located largely in the outermost dark coverings of the rice kernel. In the various grains, also, the vitamins are present in much greater proportion in the outer dark layers and in the hull rather than in the interior substance. These discoveries of chemical and medical science seem to indicate that the positive "organic mineral salts" located in the outer parts and hulls of grains are the carriers of "vitamines." All the dairy products, including eggs and honey, are very rich in vitamins, or, as we express it, in the vito-chemical life elements and in animal magnetism.

I hardly believe there is heat sufficient to kill the vitamins of the honey in the drink I take each morning, that being my sole breakfast.

[See the department of "Gleaned by Asking" for more of Dr. Miller's contribution to this Gleanings.—Editor.]



WE finished making last seasons' beeswax a week or two ago and had a total of over 450 pounds. It was made from capings, scrapings, drone combs, sections of granulated honey, and old combs, some of which had been in use for over 40 years.

\* \* \*

"Better one hive yielding surplus than a score that give you naught," says Grace Allen, page 91, and she is right. We estimate the value of our bees by the strength of colonies, not by their number.

\* \* \*

On page 86, in speaking of the granulation of sugar syrup fed to bees, Dr. Miller quotes Mr. Crane as saying, "there is a little granulation without the acid, but no more than with it." It would have been more correct to have said honey instead of acid, for honey was what I was thinking of.

\* \* \*

In spite of Mrs. Puerden's warning that "Our Food Page" was not for Mr. Beekeeper in the February number of Gleanings, I could not resist the temptation to read it, and found in it not only a good recipe for bread but a most excellent recipe for domestic happiness. It is a keen source of pleasure for most parents to eat food their children have cooked. No more wholesome or healthful joy comes to childhood or youth than the satisfaction of having done something well that grown-up people do. It matters not whether it is cooking a loaf of bread, breaking a colt, or caring for a hive of bees. It lifts their young lives to a higher level.

\* \* \*

Dr. Miller inquires, page 86, "Who can tell us in what cases granulation is likely to occur, and why it occurs in one case and not in another?" I can not, as I have not had enough granulation of sugar syrup when fed to bees to study the subject very carefully; but, if I may indulge in a Yankee's privilege of guessing, I should say it would be more likely to occur in a weak colony than in a strong one, or when placed in cells in which there was some honey that granulates quickly. The Doctor closes his paragraph by saying, "The whole thing is in something of a muddle." Not at all, Doctor. Just feed your bees the syrup early or late, and the bees will do the rest. There is far less danger of the syrup's granulating than there is of the average honey the bees store.

\* \* \*

That is certainly a most creditable showing of the "Oklahoma Boys and Girls' Bee Club," as given on page 83, a number of

## SIFTINGS

J. E. Crane

members producing from 100 to 125 pounds of honey to the colony, and that in "one or the poorest seasons in the history of the State." Of vastly greater

value than the honey sold is the effect upon young lives by having met with success in their efforts. I know a college president who began his business career by building up weak colonies of bees and selling the surplus from strong ones, to secure an education. Later, he has taken a small, weak college and built it up into a prosperous institution and secured an endowment sufficient for many years to come.

\* \* \*

M. L. Jones, page 85, February Gleanings, seems to be much exercised in regard to the best way to get rid of excessive moisture in his hives. This is really an easy matter with a strong colony. A cubic foot of air at a temperature of 30 degrees will hold two grains, troy weight, of moisture when it becomes saturated. Raise that same cubic foot of air to 70 degrees, and it will hold four times as much moisture before it becomes saturated; and, unless more moisture is added to it as the temperature rises, it becomes a very dry atmosphere. That is why the air in our living rooms in winter is so dry, and so many complain of catarrh. If the air in a beehive is too damp, we have only to raise the temperature to make it a dry air. This can be done either by warm packing or by reducing the size of the brood-chamber.

\* \* \*

J. L. Byer, I have something to say to you. You say, page 95: "To all who say that colonies can have too much honey and too little 'winter nest' for good outdoor wintering in a climate similar to ours, I respectfully suggest that they try the matter out." \* \* \* "I feel almost like saying that I will stand the loss in wintering if loss occurs." Well, you "almost" have the courage of your convictions. Now, let me offer a proposition. Suppose you take a good colony of bees and on Nov. 1 transfer the bees to a brood-chamber or hive filled with combs that are solid with sealed honey, and try to winter out of doors the same as others. If I were a betting man, I would bet my cooky against your doughnut that they will be as dead as a doornail in the spring or at least nearly worthless. However I won't bet; it is wicked. But, say! if they come thru in good condition, I will not only "almost" but be quite willing to stand the loss. I tried this matter out some 25 or 30 years ago by feeding 10 or 12 colonies until the hives were crammed with honey in late October—with the result that some of them died, and others were greatly reduced by spring.

"I'll tell you what I'll do," said the nicest man I know, "If you will be ready by the last of the week I will take you down to Florida for a few days." And we were, and he did, and that is why you are going to be told something about Florida foods this month.

Let me start by telling you about our first meal on Florida soil, which will always remain in my recollections as a banquet. Perhaps, in order to make it plain just why it is such a pleasant memory, it will be necessary to tell something of our experiences previous to that banquet. After a long delightful day of running among the mountains, dodging between them and sometimes taking a header right thru a mountain we (father, mother, fifteen-year-old boy and eleven-year-old girl) arranged ourselves compactly, if not comfortably in our berths, went to sleep, and expected to awaken in Florida. But morning found our train stranded in the hills of Georgia where we were held 15 hours, waiting for a landslide to be cleared away. But the sun was warm, the scenery beautiful, we were together on a vacation, and we climbed up and down to our hearts' content, incidentally acquiring ravenous appetites. The food question did not trouble me any, that not being my business when we are traveling, but I noticed that the head of the family seemed anxious to keep us from straying far from the diner about the time breakfast should have been announced and wasn't. When it was finally ready we had a good meal, but later comers were not so fortunate as the provisions gave out, and the chef was not resourceful enough to find any in the neighborhood, altho some of the passengers managed to forage for themselves. After the train finally got started it dropped the diner, probably in Atlanta, where we were given a very few minutes to make a dash for the railroad restaurant. As the waiters there could not see any need of haste, even if there was a trainload of hungry passengers, we had only a sandwich apiece. After that not a bit of food was in sight until nine o'clock in the evening when we finally picked up a diner. By that time I had gone to bed hungry and declined to arise and accompany the rest to their belated meal.

The next morning the provider of the family advised me to lose no opportunity for a meal hereafter when traveling, for (would you believe it?) they had cruelly dropped that diner again in the night. However, as the breakfastless hours wore on I could not see that the others were enduring any fewer pangs of hunger than I. At last we stopped for ten minutes at a little Florida junction, and the livelier passengers sprinted toward a restaurant sign over

## OUR FOOD PAGE

Stancy Puerden

the door of a little shack between the tracks. Inside there was a row of stools in front of a counter all too short. The best runners sat on the

stools while the others stood behind and ate standing, as if they were at a reception, but with a difference. On the counter were plates of sandwiches piled mountain high, there were thick cups filled with coffee, and condensed milk for the coffee. In front of where we sat, for we were among the good runners, was a great plate of egg sandwiches. These consisted of a couple of thin slices of bread put together without butter, and on top and extending beyond the bread on all sides was a sort of omelet. I think it was one egg, possible more, beaten a little and then fried and turned in plenty of fat. By the time one had eaten three, as I did, her fingers needed a finger bowl, or rather a bathroom with soap, and there were not even napkins. But the food seemed clean, the eggs were obviously fresh and piping hot, the bread good, and everyone was happy. There were other sandwiches containing some kind of meat, but the egg sandwiches were too good to risk experiments on other varieties.

I shall have to admit that I have hitherto looked on Florida as a State where they raised profitable crops of tourists and oranges and not much else, and because of the climate a sort of paradise for old people and invalids. Not really considering myself in either class as yet, I have not cared much for the State. Perhaps the fact that my previous visits have been preceded by a killing freeze has made me blind to what a wonderful place it is. When we reached St. Petersburg and took the little steamer to cross Tampa Bay to Bradentown the air was so soft, yet invigorating that, like Harry Lauder, it "intoxicated us with bliss."

Our Ohio friends had said, when told where we were going, "Why should you go to Florida when we are having such warm weather here?" But, believe me, warm January weather in the North with gray skies, naked trees, barren gardens, and mud is nothing like the blue skies, sunshine, fruit, and flowers of Florida. An open winter in the North is the kind to run away from. The real thing with snow, ice, and tingling cold weather has charms of its own.

Of course we went straight to A. I. Root's little home in Bradentown, and of course we found him in his garden and happy. How I did wish for a good camera. But no half-tone could do justice to those long, orderly rows of luxuriant potatoes, the rich green of the foliage contrasting beautifully with the soft ashen gray soil. That soil, by the way, always makes me break the last of the



commandments. Gray when dry, black when it is wet, soft and friable at all times, it must be a delight to work in it. Surely Eden had just such soil.

In addition to the main crop of potatoes there were green peas, string beans, lettuce, onions, and radishes in their prime with a promise of green corn, tomatoes, and other good things, providing Jack Frost is merciful, and he usually is on that favored peninsula. And there were other things growing in that garden, cacti that bear fruit and other strange plants which Mr. Root delights to test, and the whole garden bears the stamp of his originality. If I ran across an A. I. Root garden in Africa I think I should recognize it.

The children had the delightful task of picking their oranges and tangerines right off the trees. While the grapefruit in Mr. Root's garden were gone they could be bought in Bradentown for 20 cents a dozen—think of it. We each ate a whole one every morning for breakfast. And when we were only an hour away from Bradentown we could have ordered them on the diner, but didn't, for 20 cents a half a grapefruit, a nice little prolt for some one.

If flowers are a fitting accompaniment to food on a dining table it is all right to talk about them on a food page, isn't it, Mr. Managing Editor? I am going to any way. Here in Ohio we cultivate and spray and guard our hybrid tea roses and there is great rejoicing over a perfect bud. In Mr. Root's garden there are buds in abundance that you couldn't buy for \$10.00 a dozen in the North at this time of year, and grown with almost no care. They seem entirely free from the aphids that I fight all summer, and the foliage is remarkably free from disease. The next time that a nurseryman tells me that roses are at their best on a clay soil I shall tell him to go to Florida and see the roses growing in the sand.

To return to the subject of Florida as a food-producing state, we were taken to visit the largest producing grapefruit grove in the world at Manavista, across the wide Manatee river from Bradentown. It is said to contain 94 rows of grapefruit trees, 100 trees in a row. Most of the trees were large, like apple trees in an old orchard, and as the manager told us their yield this year was the largest ever known I infer that the fruit part of many northern breakfasts came from that grove.

Here is where I saw an apparent waste that pained my Food Administration trained conscience. I saw another in the cotton fields of Georgia, but cotton is not a food, altho I do believe that land which has borne a crop of cotton too poor to harvest might better be put to raising food crops.

As I was about to remark when interrupted by myself, in this grapefruit grove and in other grapefruit and orange groves in other parts of Florida there are quantities of fruit on the ground. When I asked why it was not gathered I was told that it never

was, that it would not do to ship altho it tasted all right if used at once. I believe an attempt to bottle the juice has been made, and it was not altogether a success. Surely it could be used for marmalade. Do you suppose some Floridian will read this and suggest that we Northerners may take care of our windfall apples and leave the windfall grapefruit and oranges to them?

A pleasant surprise to me was to see acres and acres of thrifty-looking truck gardens on our way to the grapefruit grove and in other directions in Manatee County. I never before saw such quantities of fine head lettuce, cabbages, beets, and celery. Later, tomatoes and green pepper plants will take their places.

Honestly, I am ashamed to mention another attraction to a Florida winter, as the list is so long as it stands, but I just cannot omit strawberries. And it is not alone that strawberries may be had in winter but the fact that they may be had practically all winter, nearly a six months' season, I believe. It makes me feel like accusing Mother Nature of partiality when you think that she grants Florida a six months' season of our favorite berry while we do well if the season lasts four weeks.

Maybe Florida is doing as much to promote good health thruout the country by her citrus fruits and fresh winter vegetables as in affording a health resort and winter playground. She is certainly doing her part toward feeding a hungry world. It was a surprise to me to learn that the corn crop of the State had brought more money than the orange crop. And the Florida pigs had grown so plump that we had difficulty in finding a real razorback to show the children. While cattle are becoming quite plentiful in Florida, just between you and me they do not look like the "contented cows" of a Carnation milk ad., but I suppose they give milk.

Dear me, after writing all this about Florida foods I have omitted fish, oysters, sweet potatoes, bananas, sugar-cane syrup, and honey. Well, they are all there, and in abundance. I was certainly glad to have a chance at last to sample the cane syrup with all the sweet nature put in the cane left in the syrup. It is indeed a very different product from the molasses which is left after extracting all the sugar possible. Southerners tell me they like it quite as well as our maple syrup. Possibly that is because the best maple syrup is seldom on the market except in its native states. To me maple syrup is the second finest sweet in the world. I believe beekeepers generally will agree with me if I put honey first.

\* \* \*

#### ORANGE MARMALADE.

1 lemon	honey or sugar
3 oranges	water

Quarter the fruit, rejecting the seeds and any tough membrane at the core; put thru the food chopper, measure, and for every pint of fruit pulp add three pints cold water

(Continued on page 195.)

THE time of conventions is with us again, and the sound of addresses is heard thru the land. All good side liners should go to conventions.

Unfortunately, a convention, like the very human beings therein convened, can be in only one city at one time. So neither the national nor the state gatherings can possibly be held in the most convenient place for everybody. But they are always convenient for a great many and fairly accessible to still more. And they are very much worth while.

Of course the professionals are always there, making most of the addresses and giving freely of advice and experience; while the interchange of views and the arguments about methods, if satisfyingly enlightening, are largely in their hands.

There are two reasons the large and successful beekeepers and honey producers are pretty certain to be found in faithful attendance upon conventions. One is that they realize how others now look to them as they once looked to some one else for leadership, and they are glad to do their share in a world where co-operation is one of the greatest words yet spoken. The other reason is their own eagerness to learn. We may not smile at this. This is the attitude that has made them what they are. Such men are always on the alert for new ideas. If they can pick up one suggestion of an easier or a quicker or a more efficient way to accomplish some desired end, they feel that that one little idea may more than compensate them for the expense and trouble involved in attending the convention. If this is true of the big ones, how much more true of the small ones. They have so much more to learn. And in any assembly of live beekeepers there is a chance to learn.

Our own Tennessee convention met with several disappointments, as there were three or four scheduled on the program who were not able to be present. But at that, it was a good convention, good particularly in the spirit of brotherliness it helped to foster. And always I shall regard that as a not unimportant aim of conventions.

Following a paper by George Ainslee, Knoxville, sweet clover came in for some animated discussion. When something beneficial to beekeepers does as well as sweet clover has done, so near to home as Kentucky is to Tennessee, it is time for the home people to take notice. This is true not of Tennessee alone. It is a truism. We ought not to wait for opportunity to come to us in such matters, we are to make opportunity ourselves. Porter Ward told us how his own locality, which he formerly considered somewhat poor, has recently improved materially by the rather extensive

## Beekeeping as a Side Line

Grace Allen

introduction of crimson clover. Many another location has passed thru similar changes. Who can tell what can be made of mediocre chances

when deliberate effort is put forth toward improvement?

But the prize feature of our meeting was C. P. Dadant. Over and again, all thru the program, he answered questions on various subjects with directness and wisdom. His own paper on "The Management of Out-Apiaries" came in the evening session, and it goes without saying that it was a forceful presentation of the subject. Plied with questions as to the advantages of those famous big hives, he left his hearers well convinced of their many superior points. And he left them still more convinced of the friendliness and courtesy and force of the genial editor of the American Bee Journal.

The Tennessee convention passed one rather important resolution, passed it without one dissenting vote, and with a great deal of favorable comment. The Tennessee State Fair management every year prints in its catalog a rule to the effect that exhibits in the Agricultural department must have been produced by the exhibitor the year exhibited. There has been no such rule in the Apiary section. Thus it has been left to the judgment of each individual exhibitor to decide whether honey produced in previous years, or honey purchased from some other producer, might with propriety be entered. Judgments differ. So the Association went on record as desiring rules and restrictions in the Apiary section similar to those in the Agricultural section. A committee was appointed to lay the matter before the State Fair management, and inform them of this earnest request of the association, "in convention assembled."

Of course the little labeled samples of different kinds of honeys are not supposed to be produced by the exhibitor, and granulated honey is not supposed to have been produced the year exhibited. So these are not to be included in this ruling. But surely in the case of any extracted or comb honey regularly entered in competition for prizes, some such regulation is necessary, or at least wise and reasonable. The honey exhibit at State Fairs should represent a friendly, straightforward competition among honey producers of their own product, and should not under any circumstances slip down into anything less open and dignified.

One thing that was again and again brought out at the Nashville convention was the necessity for reading. It is folly for the beginner to try to learn everything of his own experience. Others have studied out wise steps and successful ways of doing



things. All this accumulated wisdom is his for the mere reading of it, and the digesting, and the applying. Nor could any beginner expect the time of a convention to be given over to the explanation of what are mere rudiments, long known by all present except the two or three very new ones. Even were it reasonable to turn the meeting over thus to such primary instruction, the beginner could not learn it all that day. So the thing for him to do is, as has been said countless times, read—read—read. As one of Mr. Adkisson's clever negro verses says in conclusion,

"T's sho gwine git me some modjun hives,  
De Gleanin's an' A. B. C.;  
Den de w'ite man an' de w'ite man's bees  
Aint gwine ter have nothin' on me."

\* \* \*

Those of us who had not heard the heavy news before were utterly saddened to learn at the convention of the death in France of Frank Ring of Franklin, Tenn., one of our younger beekeepers. Somehow it struck hard and deep, that news that day—he was so young, so strong, so upstanding, so boyish. The last time I saw him was at the State Fair in 1917, gay and full of light-hearted good cheer. At the Fair last fall his father took a bit of the red, white, and blue decoration from our booth to inclose with a message of good wishes I sent to Frank by him. I wonder if he ever got it. Oh, you who sit by the peace table in Paris, be wise and godly in your judgments. We have laid holy gifts on the altar of righteousness—it is yours to see the altar kept clean and fair, worthy forever of the sacrifice. They must not have died in vain, Frank Ring fresh from his bee-yard in Tennessee and those uncounted others from their homes over all the earth.

You know Rupert Brooke's wonderful sonnet beginning,

"If I should die, think only this of me  
That there's some corner of a foreign field  
That is forever England."

So, over there now, there is a corner of a French field that is forever Tennessee. Surely sometime soon there shall be blossoming things on it that shall bring the bees, and all around and above shall be a humming like the humming in the old yard at home. And, somewhere, Frank shall know, and smile.

\* \* \*

It has certainly been a mild winter over all the country. The new year came in 'on rather a bad day, here, when the mercury dropped from 65 to 29 degrees, and there was sleet, and wind with a velocity of 35 miles per hour. Not very bad, yet that was the worst wind and the worst daily variation in the whole of January. The mean temperature for the month was 40 degrees, and that's not very mean. Last year it was 26. Normal for January is 38.

We are all feeling pretty thankful for that big fall flow, and the hives so heavy

with honey; for such a warm, open winter as this is calls for a wealth of stores. Now if only the spring will not convict us of queens honey-bound in the fall! More than one beekeeper is worried.

\* \* \*

Three thousand tons of honey hoarded in Australia for speculation! Naughty, naughty somebody!

\* \* \*

Some one asks, "If a man who works on a farm is called a farmer, and a woman who does the same work is a farmerette, why isn't a man who works with bees a bee-er, or beer, and a woman who does the same work a beerette?" I don't know; perhaps it's contrary to the recent 18th amendment to the constitution.

\* \* \*

A certain sympathetic gentleman who believes in poetic justice has admitted that if there were any of the beekeeping fraternity among those who were soused with molasses in the explosion of the molasses tank in Boston in January, he hoped it was some one who had rolled queen bees in honey. "Served 'em right—let 'em find out how it feels," he imagined the queens murmuring, when the news reached them.

\* \* \*

The ground hog saw no shadow on the first of February, so, according to the queer old tradition, winter is practically over. Tree tops are full of promise. Onion sets are being quoted on the market page of the daily papers. The bees are bringing in pollen. So, tho this is only the third of February, the wonder season seems to be almost upon us. Still there are many, of wide experience and little faith, who cry, "Beware of February and March!"

\* \* \*

#### MY THOUGHTS.

Some days my thoughts are butterflies,  
And some days they are bees,  
But every day they fly away  
Beyond the farthest trees  
To where some perfect beauty lies  
For either bees or butterflies.

Sometimes they've color on their wings,  
Sometimes they hum a song,  
Sometimes they glean as for a queen  
Fair gifts I've wanted long,  
And bring me back the lovely things  
With raptured song and homing wings.

And that is when my thoughts are bees,  
When every joyous flight  
Brings something back from that wild track  
They make across the light.  
For fairy plunder no one sees  
My thoughts take flight like flashing bees.

But when my thoughts are butterflies  
They rift so gently out  
I scarcely know they mean to go  
Or what they are about.  
They are more beautiful than wise  
When they drift out like butterflies.



## FROM NORTH, EAST, WEST AND SOUTH



**In Northern California.**—There was a but little rainfall here during January, not enough in fact to warrant the beekeeper to move into the Coast foothills. Unless several inches fall during the early part of February it would not seem advisable to move to this early source of nectar. Spring moving will be confined mainly to the almonds, prunes, and then to the oranges. The large almond-producing counties are Butte, Sutter, Yolo, Sacramento, and San Joaquin. The prune belt is found in Santa Clara and the orange belt in Tulare County. As yet there is no overstocking among the almonds and prunes, nor is it likely that there will be, altho each succeeding spring many more orchardists are paying beekeepers one, two, and three dollars a colony for bees placed in their orchards. The value of moving to almonds and prunes is not so much for the crop of fruit-bloom honey so secured (as a matter of fact it is only under favorable conditions that a full extraction is taken off), but for the purpose of breeding up the bees into full colonies and for making some increase. Bees having received the benefits of almond bloom are usually in excellent condition to be moved to the oranges. On the other hand, in order to bring bees up to proper shape for the orange flow, they should have been left with ample stores the previous fall. By ample stores is meant from 30 to 50 pounds to the colony. Bees left with ample stores will always begin breeding early, and this early activity within the colony may be hastened by moving or stirring up the colony in some manner and by breaking the cappings of sealed honey near the brood from time to time. Likewise, attention must be paid to a sufficient source of pollen during the breeding period. Combs containing pollen help, but better and quicker results are obtained when the pollen supply comes fresh from the fields. If a beekeeper contemplates moving to the oranges and finds it impracticable to make a move to deciduous fruit bloom, let him then take advantage of mustard and wild-radish fields. An early pollen and nectar source always gives better results than stored honey in the hive, and it is much the cheaper way to strengthen colonies for a main honey flow. Stimulative feeding, which is feeding small quantities at regular intervals, is a burdensome and laborious task and is not to be recommended to the beekeeper with outyards.

The Central Valley Honey Producers' Co-operative Exchange, altho lacking three months of being a year old, had during 1918 a very successful season. It started on its career last April with but half its present membership of 43 members. Altho the members were not required to market their bee products thru the Exchange, the Exchange handled nevertheless slightly

over 200 tons of honey and several tons of beeswax. With increased membership it is anticipated that the Exchange will handle the coming season double the output of last year.

M. C. Richter.  
Modesto, Calif., Feb. 5.

\* \* \*

**In Southern California.**—Our long period of dry, windy weather was broken Jan. 31 with a gentle soaking rain. From one and one-half to three inches of rain fell during the storm over the southern part of the State. We have now had considerably more rain than at this date last year. The sages, which are the first wild plants to show growth, sent out some new sprouts early in the winter but have grown little or none since. This rain will likely give them a new start. By Mar. 10, everything being favorable, several inches of growth should be seen, and by Apr. 1 blossoms should appear. The orange buds are swelling and, as usual, the blooming season will be governed very materially by the weather conditions. We have a variation of almost a month in the beginning of the prime blossoming period of the orange—from Mar. 25 to Apr. 25.

The California State Beekeepers' Association held its thirtieth annual session in Exposition Park, Los Angeles, Jan. 29-30. E. R. Root, Editor of Gleanings, gave a very fine talk on honey, markets, and beekeeping in general. Mr. Root gave much encouragement to the beemen with the information that, in his opinion, honey would remain at a good price during 1919. From the articles appearing in the Los Angeles papers giving accounts of talks before large audiences, it would seem that he is doing good work in getting our industry properly before the public. Pictures of Mr. Root, with his face covered with bees, were also found in the papers. A. B. Shaffner, who has had much beekeeping experience, talked on marketing the crop. R. Powell, president of the Riverside County Club, spoke on moving from the oranges to the sages. He paints his hives two coats on the inside and gives the outside three coats, and perhaps has one of the neatest apiaries in the county. Having everything uniform, the hives tight, good moving screens, and plenty of ventilation were some of the strong points in favor of successful moving. L. L. Andrews had assigned to him the topic, "Migratory Beekeeping." The shipment of four carloads of bees to northern Utah during the years 1912 and 1913, moving several hundred colonies two and three times each year to reach the orange, sage, wild buckwheat or river-bottom ranges have been part of his beekeeping experiences during the past 20 years. The average price received for extracted honey dur-





## FROM NORTH, EAST, WEST AND SOUTH



ing these years has been 6½ cents, ranging from 3½ to 22 cents per pound. The officers elected for the ensuing year are: A. E. Whiteside, president; F. G. Bedell, vice-president; A. B. Shaffner, secretary-treasurer; executive committee, M. H. Mendleson, Frank Buchanan, Mrs. Russel J. Waters. The place of the next annual meeting was left with the executive board.

Carloads of bees continue to arrive from Utah and Idaho. Many of these apiaries were taken in the fall to a place near a railroad siding, and when the proper time came, they were loaded on the cars. Some owners will run their bees largely for increase, the shipment of pound packages, and early queens for their northern yards. Others will apply all of their efforts to the production of honey, making only such increase as seems justifiable. About 3,000 colonies have already arrived and more will likely follow.

The Orange Belt Co-operative Honey Producers' Exchange met in annual session at Pilgrim Hall, Riverside, Jan. 8. It was decided at this meeting by a unanimous vote to unite with the State Exchange. H. A. Wagner of Redlands, J. A. Mack of Bloomington, R. Powell of Riverside, E. W. Horne of Riverside, and L. L. Andrews of Corona were reelected as directors. E. W. Horne was chosen as secretary-manager and will have charge of all assembling of honey, distribution of supplies, etc.—in co-operation with the State Exchange. General Manager Chas. B. Justice and State Market Commissioner Harris Weinstock were in attendance and gave excellent talks on marketing and the successful workings of the various exchanges in California. E. R. Root of Gleanings' fame was also there. In his address he surely gave us some valuable information about honey marketing and the uniformity of interest between the supply manufacturer and the honey producer. Mr. Root made it very clear why it is to the interest of the one as well as the other that the price of honey should not be allowed to slump, thereby discouraging the buying of supplies as well as the production of honey.

L. L. Andrews.

Corona, Calif.

\* \* \*

**In Michigan.**—The indications are that the demand for bees during the coming spring will be as great as or greater than it was last spring. More bees will be for sale, but the price seems to be even higher. The State Inspector of Apiaries is attempting to place buyers and sellers in touch with each other thru securing a list of colonies for sale and a list of persons desiring to purchase. If you wish either to buy or sell, write your wants to the undersigned.

Much anxiety is being felt among some beekeepers because of the shortage of

stores, due largely to the warm weather of the fall and the winter. An examination of some colonies which were fed up to normal last fall has revealed the need of more food before spring. Every Michigan beekeeper should make an examination of his colonies at the first opportunity. If food is needed and the weather is not suitable for feeding syrup, then feed hard candy or loaf sugar. From reports received, it is feared that there may be a repetition of the losses sustained a year ago unless feeding is resorted to very soon.

The writer was much impressed by the oft-repeated statement at the recent convention that the price of honey is in no way based upon the cost of production. How many Michigan beekeepers know how much it costs them to produce a pound of honey under their particular conditions? I venture to assert that not a dozen Michigan producers who read this paragraph can write to me the exact cost of production for the past year. If this statement is true (and I believe it is), is it not high time that some steps be taken at once to determine accurately what it costs to produce honey under the varying conditions present in this State? It has been shown that nine persons out of ten are losing money with their chickens. May not that be true with the bees? As long as it has not been shown that honey is being produced at a profit in the average yard, the statement of a loss can stand undisputed as well as a statement of a profit. If you are interested in this and if you would like to have the College take some steps toward determining this, then write me a letter at once stating the handicap which this condition imposes and ask that some steps be taken immediately toward determining the cost of production thru a series of several years. Don't wait for some other fellow to write. Get busy yourself. If the beekeepers will not ask to have this done, who will?

The annual convention of the Michigan State Beekeepers' Association, which was held in Lansing Jan. 21-23, was pronounced by those present as the best convention in many years. The attendance was above expectation. An average of about 150 persons attended each session and it is estimated that over 250 persons were present at one or more of the sessions. The program was followed out as printed with few exceptions, one being that Miss Iona Fowls appeared in place of E. R. Root, adding greatly to the interest and profit of the program. Gleanings surely picked a winner in securing Miss Fowls as assistant editor. C. P. Dadant was unable to be present, but he forwarded his paper, which was read by the secretary. Arthur Sharrow, who was to have spoken on "Two Queens in One Hive," was called into Government work some time ago, and the letter notifying him of the date of the



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convention did not reach him till too late. The whole time of the convention passed very quickly and profitably, and it was with reluctance that those attending separated at the close. The banquet was attended by more than one hundred persons. Hon. Thomas Reed, Speaker of the House of Representatives, presided as toastmaster. Among those who responded were Senators Scully and Watkins, retiring President Hon. Colin P. Campbell, incoming President Miss Addie Sly, retiring Vice-President Mrs. Floyd Markham, W. L. Cheney, L. C. Woodman, and E. M. Hunt. The banquet was a most decided success and was thoroughly enjoyed by every person fortunate enough to attend. It was decided to hold the next annual meeting at Lansing, the date to be announced later. A summer meeting of the State Association will be held at some point in northern Michigan. The officers for the ensuing year are: Miss Addie Sly, president; Mr. Leonard Griggs, vice-president; B. F. Kindig, secretary-treasurer. A more extended review of the proceedings will be found from month to month in the Beekeepers' Letter, which will be sent to the names on our mailing list.

East Lansing, Mich.

B. F. Kindig.

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**In Ontario.**—A restricted brood-nest about solid with honey is an ideal condition for a colony wintering outdoors to be in, during a very mild January. That is what I meant to make clear on page 95, February issue of *Gleanings*.

A regrettable error occurs in my copy for the February issue relative to the death of Mr. Brunne. Mr. Brunne, Jr., is alive and attended our convention in February, my informant having got the wrong information in a measure. It was Mr. Brunne, Sr., who passed away instead of the son, as I intimated. Mr. Brunne, Jr., informed me while at the convention that his father and his uncle both had died within a few days of each other.

This is a very peculiar winter here in Ontario, and, no doubt, the same conditions in a measure prevail in a great many other sections in this latitude. It is now Feb. 7, and cars are running on the roads as in the summer season, and fields all around are bare of snow. There has been little severe weather to date, only a few days reaching zero, and the sunsets for the last few days remind one of late March instead of early February. What this brand of weather means for the bee business is, of course, only a matter of conjecture. Owing to little extreme weather, clover and fall wheat appear to be all right, but what is in store during the next six weeks may tell another story. Reports from Ottawa and from points near the Vermont boundary in Quebec state that there they have six inches or more of

snow on the level and have had that about all winter. Bees have had thoro flights in southwest Ontario, while here (ours at least) have not had a general flight altho many colonies have had partial flights.

The honey market seems to be dull and dealers are loath to buy large quantities and at prices anywhere near what prevailed a short time ago. Lack of export demand is their explanation, and while they do not claim that honey is actually much lower yet they hesitate to buy. Just recently I was shown a press item that stated that Great Britain had removed all import restrictions on syrups, molasses, and other articles of like nature (this would undoubtedly include honey), the ruling going into effect on Feb. 24. Possibly, this may clear up the market situation a bit; but, personally, I believe the crest of high prices has been passed, and that honey in line with other food commodities will gradually fall a little from present quotations.

The Ontario Beekeepers' Association met in Toronto on Feb. 4, 5, and 6 with a large attendance, running between 200 and 300 for the various sessions. Interest was keen thruout the whole three days and a profitable and pleasant time was spent. Dr. Gates made his first appearance before the Ontario members of the fraternity since accepting the office at Guelph, and met with a very cordial reception. His announcements as to policy to be formed sound progressive, and he will have the good wishes of the great majority of the beekeepers of the Province. Space forbids my going into details, but aside from work in laboratory and actual teaching in the college, much experimental work is contemplated. Nearly if not all the speakers on various topics at the meeting were optimistic as to the future, but most thought that there would be a slight falling off in prices next season in case a good crop was assured. The importance of having motor cars for assisting in apiary work was emphasized by a number, and in this respect it would have been a source of interest to have ascertained how many in attendance were using autos. Certainly the number would have been quite large, while but a few years ago it was an easy matter to mention the few that used cars. Generally speaking, a light truck was favored rather than a heavy one, or trailer. We have a trailer for one of our cars, but after two years' use have come to the conclusion that we would much prefer a light truck. Farming combined with beekeeping was a live subject, and while the argument can be made interesting from the standpoint as to whether specializing pays best in either line as compared with the two combined, certainly it was made apparent that some good beekeepers and some good farmers are combining the two with great





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success. Little new legislation in any line was suggested, altho the usual discussion (a beekeepers' convention would seem queer without it) on foul-brood matters and suggested improvements to the law were not wanting. The officers elected for the ensuing year are about the same as last year, excepting that Dr. Gates of the College, Guelph, Ont., is now secretary. All business in connection with the Association should be directed to him in the future instead of to Mr. Hodgetts at Toronto. J. L. Byer.

Markham, Ont.

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**In Minnesota.**—The influenza is on the wane in Minnesota. Special Field Agent McMurry had started work here again the first of January but was compelled to stop on account of the epidemic. After being postponed twice the annual meeting of the Minnesota Beekeepers' Association was held in Minneapolis on Jan. 29 and 30. The attendance was more than 125, and the meeting was considered by many to be one of the best in the history of the association. Prof. A. W. Rankin, in his opening address as president, laid special emphasis on the importance of forming local associations affiliated with the state association. He also suggested that inasmuch as the war is now over it might be well for beekeepers to produce more comb honey. Twenty per cent of those present signified their intention to produce comb honey next summer. A committee was appointed to consider and report as to the best plan for those to follow who have not more than five colonies and desire to produce only comb honey. Prof. L. V. France gave a report on the distribution of bees and beekeepers in Minnesota. So far as he has been able to gather information on the subject he finds that the counties having the largest number of colonies are Fillmore, Hennepin, and Morrison. A demonstration of fall and winter insulation was given by Dr. L. D. Leonard. His method consists in putting insulate on the frames under a two-inch telescope cover and then tacking insulate on the sides and ends of the hive. This is put on the hive early in the fall and remains on in the cellar and until late in the spring. H. L. McMurry mentioned as one of our unsolved problems the content of honey as regards the injurious factors in various honeys for wintering. He expressed the opinion that there are more losses from improper food than from any other cause. Prof. R. W. Thatcher, Dean of the Agricultural College, brought a message of optimism concerning the future and assurances of his hearty co-operation with the work of the beekeepers of the State. Frank S. Pool, who served as sugar representative for Minnesota, gave an interesting review of his work with special reference to his dealings with the beekeepers, which he said were very

pleasant. Prof. R. A. Dutcher of the State University spoke on the subject, "Does Honey Contain Vitamines?" His address was exceedingly interesting. He said that he had been able to find only small quantities in honey. Carl B. Stravs, Superintendent of the Department of Bee Culture at the State fair, made an earnest appeal to the beekeepers of the State to take greater interest in the fair and to recognize it as one of the greatest means of advertising Minnesota honey and thereby aid in building up the industry in the State. (I shall have more to say along this line in a future issue.) Major Francis Jager, who has charge of the Division of Bee Culture at the State University, gave the closing address on the subject, "Bee Culture and the War." The following list of officers was elected for the ensuing year: President, Prof. A. W. Rankin, Minneapolis; first vice-president, C. M. Peck, Excelsior; second vice-president, Mrs. D. F. McQuire, Hopkins; secretary-treasurer, L. V. France, University Farm, St. Paul; member of the executive committee for three years, O. L. Wille, St. Paul.

Chas. D. Blaker.

Minneapolis, Minn.

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**In Texas.**—The mild winter prevailed in Texas as well as thruout the North. Along with the increase in temperature there has been an increase in moisture. This last feature has been most gratifying after three long years of drouth. At this place we entered the year with an accumulated deficiency equal to the normal annual rainfall. There are many who feel that a mild winter will bring an early spring. However, those best acquainted with possible weather behavior in this State predict that the spring will be cold and late. It has been observed that excessive rains during the winter tend to prolong the period of cold in the spring. The problems of such a spring are a matter of much concern. The bees may be encouraged to build up excessively, and a late freeze may cut off the food supply at a critical time. Our bees were bringing in great quantities of pollen on Jan. 29 from three possible sources. Elm was in bloom at that time, and the spring beauty was attracting quantities of bees. Peach trees in the more protected places were in full bloom so that the bees were bringing in new nectar.

On this date (Feb. 7) the first examination of our bees was made. We had been awaiting anxiously a day that would be warm enough for such work. Our colonies went into the winter under varying conditions, and curiosity was running high by this time. We found some colonies made by late divisions to be short of stores, to which a frame of honey was given. In every colony eggs were found, and in the



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best colony there were eggs in five frames out of the ten frames. This colony had brood almost ready to seal. It would seem that every beekeeper would be anxious to learn the condition of his bees as early in the spring as possible. Such an examination is certain to disclose many weak spots which can be strengthened.

The great demand for bees is already felt. One of the biggest shippers is sending an agent out to locate every bee that may be for sale. Such effort will result in much good for all concerned, in that it will take bees from a probable non-productive situation to one of extreme production. Most of the shippers of package bees have already booked all the orders they can fill with normal conditions. Since it has become possible to ship bees by parcel post, the express companies have taken a different attitude toward the package trade. A year ago they were more than indifferent to the pleas for better service. Now they are making inquiries as to how their service can be improved.

On Jan. 28 the Dallas County beekeepers held their second regular meeting in the Chamber of Commerce rooms. This association has recently been organized, very largely thru the efforts of the extension service of the A. & M. College. The start which has been made is certainly very promising for the future. At this second meeting there were 76 people in attendance. Many members reside within the city, but have become interested in beekeeping from the standpoint of backlot effort or a small outyard. Much important business was transacted and steps were taken toward securing an inspector, as foul brood is known to exist in the county.

The second annual meeting of the county apiary inspectors, held on Jan. 24 and 25, was considered a very profitable meeting by those who attended. There were 18 inspectors present, sickness preventing the six others from attending. These meetings have become necessary, as they bring together once a year all of the inspectors so they can prepare their plans for the coming year. Much discussion was given to proposed changes in the foul-brood regulations concerning the shipment of honey.

College Station, Tex. F. B. Paddock.

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**In Florida.**—The beekeepers of Florida should thank Hafford Jones, food administrator for Hillsborough County, for the interest he is taking in the matter of spraying during citrus bloom. Several articles have appeared in the newspapers and more are to follow, so let us all do our utmost to educate the orange-growers whilst they are in the mood to take notice. I have heard of two cases where apiaries were ruined last year by ill-advised spraying with arsenate of lead. Don't forget

that if one little no-account grove is poison-sprayed on your range, it may mean the loss of your crop, if not of your bees.

Another question that is worthy of consideration arises from the difficulty that is being experienced in buying bees in Florida. Last year was such a prosperous one that no one is willing to sell, and the few small lots that could be bought have been picked up by the established beemen near by. Letters are coming in daily asking where bees can be bought, and there appears to be none for sale. Many Northern beemen have stated their intention of coming to Florida and bringing their bees with them, and it is such letters that cause anxiety. Is there not some danger of foul brood being introduced into Florida if this movement of bees begins? Most beekeepers will be careful, but some will not. At present Florida is free from foul brood, but we have no law to prevent the shipment of diseased bees into the State; and should it once get firmly established it would prove disastrous to the honey industry, for it is safe to say that not one in twenty would know how to cope with foul brood. Not only would the beekeepers suffer, but the orange-growers would find a considerable decrease in their crops. It seems reasonable to believe that if the beemen and the orange-men will combine, they should have influence enough to insist upon the Legislature's preventing the shipping of diseased bees into the State. Can't we take hold of this situation before it is too late? In speaking of foul brood to one extensive honey producer, he expressed the belief that it would be a good thing if disease would clean out all the small apiaries. It might be good for a few who have had experience in the North, but it would be far from good for most of us and also for the small orange-growers that do not enjoy the privilege of being near large apiaries.

It appears there has been a considerable flow from the pennyroyal and maple, tho it is too early to look for reports of surplus. Those fortunate enough to get these flows should have their bees in fine shape for the orange, which will be in full bloom by the time this appears. There will certainly be a very heavy orange bloom this year, for the buds are already showing in great profusion at this time (Feb. 5). This bloom is coming also on the old wood, and most beekeepers seem to think that such a bloom yields better than one that comes of the new growth. It is probable that another bloom will arrive with the new growth, and so lengthen the flow. I believe that is what happened in 1914 when the flow lasted from Feb. 20 to Apr. 15. In that case we shall make a fine crop, but otherwise our bees will not be in condition to do their best work in this locality, for we do not get pollen early enough to start brood-rearing.

Apopka, Fla.

Harry Hewitt.



## HEADS OF GRAIN FROM DIFFERENT FIELDS

### How a Neighbor May Suffer.

It may interest the reader to learn where my bees got foul brood. Between the white-clover and buckwheat flows a year ago last summer we had a week or two of complete honey scarcity from natural sources. In spite of this my bees were bringing in honey at a lively rate, and, judging from their commotion and general behavior, they were robbing at some near-by place. Wishing to ascertain the cause of the trouble, I followed their line of flight until I came to a neighbor's bee-yard of five or six dead colonies. Among them stood a box hive, bottom side up, rotten with American foul brood; and, to make it still handier for my bees, some of the combs were broken or cut out and scattered over the ground.

It was too late to lock the proverbial stable door after the horse was stolen. Still, at night, when the bees had quieted down, I gathered up all the combs, broken pieces, hive and all, and consigned the whole outfit to the flames.

G. C. Greiner.

La Salle, N. Y.

[As stated on page 105 of February Gleanings, Mr. Greiner lost practically all of his colonies by his neighbor's carelessness.—Editor.]

### What Is a Very Bad Case?

On page 86, February Gleanings, Dr. C. C. Miller asked for figures to determine the difference between a very mild and a very bad case of foul brood. My idea is that in a colony with from 2 to 10 frames of brood, if less than 10 cells are diseased, the case would be a very mild one; if from 10 to 40 cells, mild; more than 40 cells to one per cent, medium; more than one per cent, bad. Fifty per cent could safely be called rotten.

Arlie Pritchard.

Medina, O.

[It would be impossible to get all beekeepers to agree on figures to determine the seriousness of a diseased condition. For each one the figures would be high or low, depending upon his fear of the disease under discussion. If this estimate refers to European foul brood, we would not materially change it except to decrease the 50 per cent by at least half. In case of American foul brood, however, we would lower all of the figures considerably.—Editor.]

### Granulated Cork for Packing.

Nearly all my hives are double-walled. I buy them in the flat and pack with granulated cork, such as Malaga grapes are packed in. I have noticed that when ice forms on top of hives and this ice is later covered with snow, that the ice on those hives which have a tray of forest leaves and pine needles on top, will

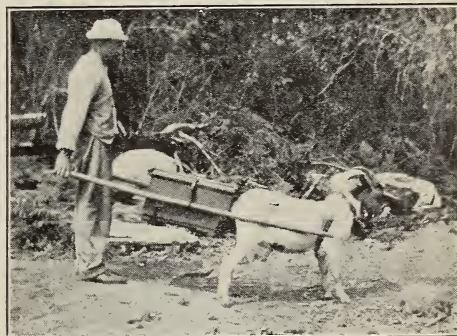
be melted in an oblong circle over the cluster, showing the escape of heat thru the sealed cover, the packing material, and the outer cover. This condition does not appear when the trays are filled with granulated corkwood. This wood seems to be a far better conservator of heat, and is, therefore, a better packing material.

Brookhaven, L. I.

E. M. Barteau.

### The Wheelbarrow for Bee-Hunters.

Here is another type of wheelbarrow known as the Toggenburg type, which is used principally for transferring bees from the woods. He is also used for pointing game. Whenever I go bee-hunting, I let him go too as he is a great woods-companion. He will leave the other goats and go with me if I let him. On a bee trip he packs my coat and lunch, while I pack the compass and glass and do the scouting. As for packing bees I let him have two-thirds of the side rails. I have a string connected with the halter and the end of the



The wheelbarrow for bee-hunting in the mountains.

rail, and pull on either one to guide him. He is right there with the goods, except he's a little fidgety about standing. This bee-tree was nearly two miles from home, made up of a mile of trail and the rest nothing but gulches, brush, and hills, some steep at that. If you are much of a bee-hunter and want a good partner, get a billy goat and train him, as it will cost nothing to keep him.

Geo. W. Kinzie.

Orting, Wash.

### Get Rid of That Moisture.

I read with much interest the article by Grace Allen, on page 28, January Gleanings, in which she says she has been reading a treatise by Ed. H. Clark in regard to the problems of moisture, etc., within the hive. Mr. Clark says we need a well-varnished hive inside to permit of this condensation so as to have plenty of

## HEADS OF GRAIN FROM DIFFERENT FIELDS

water constantly in reach of the bees, or words to that effect. I have made some observations along this line and find this condensation does more harm than good—at least, I think it does. In the first place, it is not clean water, to my mind, for a lot of it is moisture from the bees' exhalation; and it seems to me that this moisture taken back into the system is anything but helpful—to say nothing, as Mrs. Allen points out, of the moldy combs and of the moist condition of everything inside the hive. In the hives the bottom-boards of which I painted with white lead paint, I found this condensed water drained out at the entrance, if the hives were tipped forward at a slight angle, and so very little remained in the hives, and that the bees seemed to be more quiet, and there were very few or no moldy combs; while those which had no paint had wet bottom-boards for the most part and a sticky mass of wax particles from cappings, dead bees, and the usual hive accumulation in a wet smelly mass on the bottoms.

Arthur O. Heinrich.

Baldwin, Long Island, N. Y.

### New Jersey's Honey Possibilities.

I was more than happy to see that article from a New Jersey beekeeper about his skyscraper colony. I never had dreamed that this fruit-and-vegetable-producing State could supply the needs of such a colony in even a single locality. Generally, the bees in my section are supplied with a variety of short flows lasting from May 15 to Oct. 15, furnished mainly by the apple, pear, peach, plum, quince, etc., in the early spring; later, by the clover, mostly on the roadside, and dandelions and other numerous wild flowers. Then, too, there are farms run principally to supply the large cities near by with vegetables, of which there are many acres in some places. The bees can obtain quite a supply from this source, and also from cultivated cut-flower nurseries and fruit orchards for which this State is noted. It is frequently repeated that New Jersey is the State of fruit and flowers.

Taking this into consideration it seems to me strange that there are not more beekeepers here, especially those who own truck-farms, orchards, and nurseries, who could make beekeeping quite profitable as a side line. There are also a great many suburbs in which city "commuters" raise chickens, flowers, and vegetable gardens as a recreation who might well become beekeepers.

Running northwest are ranges of mountains which are a continuation of the Blue Ridge range. At the foot of these the farms and orchards are generally located, which is another advantage in beekeeping.

While I do not believe the conditions here are very favorable to the production of

comb honey, it seems to be all the go. The reason for this, I think, is because not enough beekeepers study the subject deeply enough. As I said before, a single locality does not as a rule produce enormous amounts; so, therefore, in order to add carloads to the national production, there must be many small beekeepers.

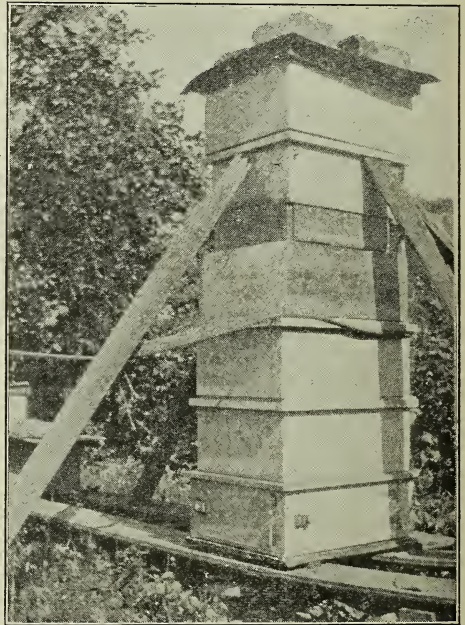
Geo. F. Kissam.

Rutherford Park, N. J.

### Will Gasoline Wash Do It?

In the January issue of the Western Honeybee the editor says he does not know that gasoline kills foul-brood germs, but his experience has been that in hives disinfected with gasoline the disease very rarely occurs—much more seldom than in hives in no way disinfected. He asks whether there is any "scientific authority" to prove that gasoline does not kill foul-brood germs.

We do not recommend no treatment of hives, and yet we have known of as good reports with no treatment as Mr. Berby reports with the gasoline treatment. If gasoline could kill foul-brood germs, this treatment would not insure the gasoline reaching all the germs; for, even altho the hive were



A Pennsylvania "skyscraper" hive, belonging to E. S. Stalker of Hallstead, Pa., which produced 308 lbs. of surplus in 1918 and abundant winter stores. The colony had a two-year-old queen and did not swarm. Rails, stones, and rope seem necessary to "hold" this hive.



# HEADS OF GRAIN FROM DIFFERENT FIELDS

scraped before applying the gasoline, there would likely be germs stored away in cracks or crannies in or under bits of wax or propolis, where the gasoline would not penetrate. We regret that we are unable to give the exact information desired, but we know that, altho different chemicals have been tried, our best scientific men are not recommending chemicals in the treatment of this disease. Even as scientific an authority as Dr. E. F. Phillips says, "The disinfection of hives and frames with chemicals is not recommended."

Medina, O.

Iona Fowls.

## Honeydew in Winter.

When walking thru a piece of timber land today, I noticed some small rocks and leaves lying on the ground covered with something that looked like glue. On close examination I found it sticky and sweet. It looked and tasted like honeydew. But who ever saw honeydew in a cold place like this in February? There were some pine trees near, and I noticed this substance hanging in drops from the leaves.

I am sending you under separate cover two leaves that are coated with this substance. Please let me know what you think it is.

King, N. C., Feb. 2.

T. W. Gentry.

[From the nature and taste of the substance found on the two leaves sent, we should say this substance is honeydew, as strange as it may seem to have found it present under the conditions stated.—Editor.]

## To Prevent Crushing Bees.

In manipulating my hives I found I could not lift a frame without more or less end-motion. The result was, I continually killed the bees between the end of the frame and the wall of the hive. I found that, by driving a small staple near the bottom of the ends of the frames, I could handle all the hives I possess without killing a bee. When the frame is lifted up the staple keeps the frame a bee-space distant from the wall of the hive until the frame is lifted clear of the hive. This idea might help others.

Winnipeg, Man.

J. F. Parker.



## THE BACK LOT BUZZER.

Ma says now that March is around again, Pappy Sourweed is working on his patent swarm eliminator. Pappy says he can always think best when he is toasting his toes.

THE drop in the price of honey caught the Honey Producers' Exchange with a few carloads of honey still on hand, according to the January Western Honeybee. The editor evidently fears this might reflect on the Exchange, and therefore he states that most of the producers restricted the Exchange to a minimum price higher than the market would warrant.

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"European foul brood, together with unwise inspection," has decreased the number of colonies in one county in California nearly 50 per cent, according to the January Western Honeybee. [The emphasized word is our own.]

\* \* \*

## SUGGESTIONS.

In the February American Bee Journal are the following suggestions: (1) Royal jelly may be preserved for weeks at a time if placed in a small bottle and corked tight. (2) By judicious advertising "we may well expect to maintain the price of honey at a profitable point. It stands the beekeeper in hand to begin his advertising campaign before a smash comes." (3) When mating a queen from an upper story, Frank C. Pellett says he always gives a ripe cell the next day after raising brood so the queen will begin laying before all the brood is hatched.

\* \* \*

## DETERMINATION OF SEX OF BEE.

In speaking of attempts to disprove parthenogenesis in case of bees, Geo. W. Bullamore, in the Irish Bee Journal for November, considers it possible that the Italian bee is the result of the crossing of other races; and he says the difficulty of finding a race of bees than can be guaranteed free from an admixture of some other race, together with the tendency of colonies to accept drones from other hives, makes it necessary for us to accept with caution any arguments against parthenogenesis which are based on the presence of multiple types of drones. Altho he believes written evidence upholds the view that sex is determined by fertilization, he says it is nevertheless possible that sex is determined by some other factor outside of the egg.

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## GOVERNMENT ASSISTANCE TO BEEKEEPERS.

The British and Irish beekeepers are far from appreciating some of the assistance the Government has been offering them of late. The editor of the November Irish Bee Journal intimates that the Government has been starving bees by refusing to supply the beekeepers with good sugar, and, instead, selling them at a high price sugar so heavily drugged that the bees refuse to touch it. He also objects to the leaflets of



advice that have been issued to beekeepers by the British Government. Some of these leaflets have been returned with strong protests. The last,

No. 48, is now on the desk before us, and we hardly wonder at the forcefulness of the protest when we find among other objectionable practices the advice to make increase early in the spring by removing a frame of brood and two of honey, with adhering bees, place on a new stand, and allow them to raise their own queen.

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## HOW NECTAR IS THICKENED.

That the six glands of the rectum of the bee are for withdrawing from the blood some of the excess of water gathered in the nectar is the belief of Dr. Brunnich, as stated in the February American Bee Journal. He says at least half of the water which makes up 80 per cent of the nectar passes thru the fine membrane of the honey-sac into the surrounding blood while the bee is flying home. In the rectum the six glands remove the superfluous water, which is discharged before the bee enters the hive. By evaporation inside the hive he believes there is done only a small part of the thickening of the honey—"from 30 to 40 per cent to about 18 per cent." This statement is a little confusing but we believe he means that the nectar when carried into the hive contains 30 per cent or 40 per cent of water and after evaporation only 18 per cent.

\* \* \*

## INSPECTION WORK.

Less law and more education is needed concerning foul brood and spraying of fruit trees, according to Frank C. Pellett, in the February American Bee Journal. Mr. Pellett, who has been five years an inspector, believes the owner should have more authority in the management of his own property. In regard to inspection work, he says that the time an inspector spends in examining one apiary might be spent to much better advantage in teaching two dozen people how to inspect and treat their own colonies.

[More educational work is certainly needed; but rather than discard present laws we should be inclined to make them still more stringent and pay a little more attention to their enforcement. We heartily agree with the advice to "get after the extension department of your agricultural colleges to put expert beekeepers into the field." This is at least a step in the right direction.]

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## FIBER CONTAINERS FOR HONEY.

In the January Domestic Beekeeper J. E. Crane says he is well pleased with the fiber containers, since they are neat and sanitary, seal perfectly, require no labels, and cost



little. He say two men can fill, seal, and case nearly fifty dozen an hour. By experience he has found there is much less danger of granulation when put into fiber cups at a temperature of 130 degrees than when put in warmed glass at a temperature of 160. Further, he states that these containers cost, as a rule, less than half as much as glass containers of the same size, which, with the saving in freight, makes the cost of using fiber containers two or three to five cents per pound less than the cost of glass. The only objection he has to the fiber container is that many people are unwilling to buy honey they can not see. The editor suggests that the only remedy for this is for each bottler to have his own trademark and see that nothing but one certain grade and flavor ever gets into a container with the given trademark.

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## CORK PACKING.

The value of cork for packing double-walled hives is again discussed by Mr. Dunn in the January Canadian Horticulturist; but D. Anguish, in the same issue, says cork is no better than forest leaves. We have always considered cork a good packing material, since it contains many air-spaces and does not hold moisture. Still, we doubt if we would rate it as high as Mr. Dunn does. It may be of interest to note the following statement made by Dr. E. F. Phillips and George S. Demuth in "The Preparation of Bees for Outdoor Wintering":

"Exaggerated claims have been made by some beekeepers for such material as broken cork or certain commercial insulating materials; but it is safe to say that there is not 25 per cent difference between the poorest and the best of available insulating materials, providing, of course, that obviously poor things such as corn fodder and straw be eliminated."

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## ISLE OF WIGHT BEE DISEASE.

The Isle of Wight disease which so closely resembles what in this country is called "disappearing" disease, is discussed quite fully in a series of articles by Joseph Tinsley in the August, September, and October issues of the South African Poultry Magazine. Because of our lack of knowledge concerning the "disappearing" disease, which is more serious and more prevalent than many beekeepers dream of, and because of the similarity of this disease to Isle of Wight, a review of these articles may be worth while.

Mr. Tinsley considers the Isle of Wight a highly contagious and deadly malady affecting bees and probably wasps. It first appeared in Britain in 1904—the same year it appeared in the Isle of Wight, from which it took its name. Four years later the colonies of Britain were reduced to a mere handful, and the next year in many districts of Scotland not a colony escaped.

Cause of the Disease.—In 1907 the Journal of the Board of Agriculture published

the first scientific report of A. D. Simms concerning the cause of the disease, and two years later the second report by Dr. Malden, who ascribed the cause of the disease to a bacillus (*Bacillus pestiformis apis*). The third report was made by Drs. Graham Smith, Fantham, Porter, Malden, and J. W. Ballamore a few years later in two different issues of the same journal. In this report the disease was definitely stated to be due to a parasite protozoan (*Nosema apis*). It is there stated that bacteria may play a secondary part in producing the symptoms, but no bacteria are found constantly associated with the disease. More recently the disease has been investigated by Dr. J. Rennie and J. Anderson. They believe *Nosema apis* is not the cause, but that the real source of trouble has not yet been found. Mr. Tinsley does not believe *Nosema apis* the cause, since he has rarely found it present. He has, however, on examination of the stomach contents and excrement, found masses of bacteria which he believes of significance.

Spread of Disease.—He believes the disease is spread by importation, by moving apiaries, by purchase of queens with attendants, by robbing, and by bees accidentally entering wrong hives.

Symptoms.—The bees become listless and lazy; the fore and hind wings are not held together as usual, and the posterior legs are rubbed over the abdomen. As the disease advances, the crawling symptoms are noticed, and many of the bees lose the power of flight, and cluster on the ground, crawling up stems of grass, and dying in great numbers. These crawling bees have distended abdomens, and appear to have dysentery, altho the writer believes this has no relation to the Isle of Wight disease. The bees die so rapidly that part of the brood perish from lack of heat. The queen is usually about the last to die. A colony may go into winter quarters in good condition, and then may die out during the winter from this disease. Bees that have died from this cause usually give off a very foul odor because of the fluid contents of the intestines, the fluid condition sometimes remaining for as long as six months.

Experiments Concerning Infection.—Various interesting experiments were tried to determine the means of infection. The liquid contents of the intestines were mixed with sugar syrup and fed to healthy bees that contracted the disease in from three to six weeks. Affected colonies were united to healthy ones by placing such bees, brood, combs, etc., in an additional brood-chamber above a healthy colony. The disease was contracted in from four to six weeks.

An extract made from diseased comb and sugar syrup was fed to healthy colonies. The disease appeared in from eight to ten weeks. The debris and fecal matter of hives from which the bees had died were mixed with water, and fed with sugar syrup to healthy colonies. The disease did not appear. This

(Continued on page 191.)

"DID you ever hear of bees swarming Jan. 10? I was in Woodbine, Ia., on that day, when along came a nice big swarm of bees and alighted on a box car. This can be proved by witnesses."—Wm. Bartell, 1308 East 62d St., Chicago, Ill.

"I have had different experiences which would indicate that bees can hear. Dr. Phillips says they have no organ of hearing. I raise the question, Is it not possible that some organ has a dual purpose?"—Alfred Hengst, Tulare County, Cal.

"When my bees work on red clover it is on the first crop, not on the second. In 1901 they worked on red clover more than on al-sike. I have never seen bees in this locality working on the second crop."—Ed. Bowman, Emmet County, Mich.

"I got 1,500 pounds of surplus this year, and sold it as fast as I could take it out of the supers at 30 cents a pound. I live in a valley on the Pacific coast, and have the only bees in the country around here. Honey comes mostly from white clover and fireweed."—W. W. Clark, Snohomish County, Wash.

"As to whether termites (white ants) would ever become a menace to beekeeping, this is entirely improbable, since they are not dominant insects nor predaceous in their habits. We have one or two records of their injuring wooden beehives when the latter were set in direct contact with the ground."—F. D. Hopkins, Forest Entomologist, U. S. Dept. of Agriculture.

"I have been very much interested in the discussion in Gleanings as to whether queens from foul-brood colonies would convey the disease if introduced into healthy colonies, as I bought three queens from Southern queen-breeders, and all three colonies into which they were introduced had foul brood. These were the only cases in my yard."—James O. Murray, Robertson County, Ky.

"I have done some serious meditating on the honey problem for the coming season. I have a home market for my honey, which demands both comb honey and extracted. I had about decided to quit-raising both comb honey and extracted; but on account of market conditions now I shall keep on in my good old way of raising both kinds as heretofore."—J. F. Swartzendeuber, Washington County, Ia.

"The common objection to large hives is that they are too heavy and cumbersome to handle. Indisputably they are heavy; but it would be curious and amazing to know the amount of pounds lifted in the course

## BEES, MEN AND THINGS

(You may find it here)

of a bee season by a beekeeper handling Langstroth hives and a beekeeper handling Dadant hives. The objectors should not overlook those weekly ex-

aminations that large hives (timely supported by supers and other essentials) permit to be entirely discarded."—D. Barone, New York City.

"Up to Dec. 8, 1918, my apiary was as busy as in the summer time, gathering pollen and honey from dandelion."—F. H. Drury, Putnam County, Mo.

"Opened a hive today, Feb. 1, and found young bees and also sealed and open brood on two frames, both sides, and some eggs."—Gilbert J. Porte, London, Ontario.

"This year I missed Dr. Miller's report on the average yield per hive. Did the good doctor have another failure last season?"—H. K. Hartman, Outagamie County, Wis.

"From my nine colonies, spring count, I got seven strong colonies and a little over 1,000 pounds of the finest honey. It was an extra-good season."—Henry D. Hagey, Montgomery County, Pa.

"Never before in my 25 years of beekeeping have I had several good strong Italian colonies keep their drones until Christmas time as was the case this year."—James Nifong, Forsyth County, N. C.

"I secured 162½ lbs. of clover honey last summer at Mt. Clemens, Mich., from one eight-frame colony, and increased five new ones, all of which are in fine condition."—W. A. Herrington, Wayne County, Mich.

"There are very few who keep bees on Long Island with any idea of making a profit except I. J. Stringham and one or two others. In the last year or so people seem to be taking more interest in bees, and one will see a few hives in a day's ride which were not here a year or two ago."—Arthur O. Heinrick, Nassau County, L. I., N. Y.

"Having completed a preliminary and rather hasty survey of beekeeping in Washington, there are some impressions which may be of interest to the beekeepers of the State. As a whole I have been struck with the very evident opportunities for the development of the beekeeping industry in almost all parts of the State. Some localities are already rather well stocked with bees; but in most places a study of the principal flora would show districts hardly touched by the bees."—Ward H. Foster, Special Bee Field Agent, Whitman County, Wash.



FROM Jan. 14 to 24 was held the annual winter course in apiculture at the Ontario Agricultural College, Guelph. The 47 men and women students represented three-fourths of the counties of the Province. The enthusiasm shown argues well for the future of the honey industry of Ontario. The course was in charge of Dr. Burton N. Gates, formerly of the Massachusetts Agricultural College, who is now Provincial Apiarist for Ontario. This was one of the largest short courses in beekeeping ever held at the institution.

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A one-week course in practical beekeeping was offered by the Michigan Agricultural College, beginning Feb. 24. The purpose of this course was to teach beginners in beekeeping.

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The Panhandle Beekeepers' Association will hold its semiannual meeting March 12 in the auditorium, Wheeling, W. Va. Prominent beekeepers will be in attendance to address the meeting.

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The fifth annual meeting of the Montana State Beekeepers' Association will be held March 11 and 12 in the basement room of the Parmly Billings public library at Billings. F. E. Clift, Huntley, Mont., is secretary of the association of whom a program and information may be obtained.

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The meeting of the Ohio Beekeepers' Association during farmers' week at the Ohio State University, Columbus, was a success. The following officers were elected for the ensuing year: Dr. Ernest Kohn, Grover Hill, president; F. B. Moore, Columbus, vice-president; Prof. J. S. Hine, Columbus, secretary-treasurer; J. E. Venard, Akron, and Mel Pritchard, Medina, members of the executive committee.

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Hamlin B. Miller, Marshalltown, Iowa, vice-president of both the National Beekeepers' Association and the Iowa Beekeepers' Association, died at his home on the afternoon of Jan. 31, after a long illness due to diabetes and erysipelas, at the age of 57. Mr. Miller was widely known to the beekeepers of the middle West, and was a familiar figure at many beekeepers' meetings held within and without his own State.

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A. L. Boyden, in charge of the Airline Honey department of the A. I. Root Co., will leave New York early in March for a somewhat extended trip to European honey markets, expecting to visit important market centers in England, Ireland, France, Belgium, and Holland. His special purpose is to investigate the new possibilities in Amer-



ica's foreign honey trade, and he is the first American to undertake such a mission. His trip may have very important results for the honey-producers

of the United States, and Gleanings has Mr. Boyden's promise to report to its readers on American honey prospects in European markets.

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The beekeepers of Herkimer County, N. Y., organized the Herkimer County Beekeepers' Society on Jan. 8 at the office of the Farm Bureau in Herkimer. A lively campaign for membership is being carried on in the hope that every beekeeper in the county will become a member of the new society. The officers are: Lewis J. Elwood, Fort Plain, president; Geo. P. Walrath, Ilion, vice-president; C. Gardner, Herkimer, secretary-treasurer.

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As Gleanings goes to press, the annual convention of the National Beekeepers' Association is in session at Chicago. The total attendance is about 125, of whom 30 are members in full standing. All the speakers on the program are present with the exception of C. P. Dadant and E. D. Townsend. Francis Jager spoke on "Beekeeping and the New Era;" Miss Iona Fowls, on "Pushing to the Front in Beekeeping;" Colin P. Campbell, on "A New Organization of Beekeepers;" Dr. E. F. Phillips, on "Factors Influencing the Secretion of Nectar;" W. H. Hall, on "Market Information on Honey Furnished by the Bureau of Markets;" Prof. F. Eric Millen, on "Beekeeping as Seen by a Bee Inspector;" Chas. B. Justice, on "Organization;" Kenneth Hawkins, on "Beekeeping in Dixie;" H. F. Wilson, on "Organizing Local Societies;" E. G. Baldwin, on "Extension Beekeeping—Fact or Fiction?" The interest in the sessions has been excellent, and some of the discussions were very warm, especially that concerning organization as brought out by Mr. Justice, manager of the California Honey Producers' Co-operative Exchange. High tide of the convention was reached when Dr. C. C. Miller, wife, and sister arrived. They were given an ovation, and the Doctor took part in the program. The annual meeting of the Chicago-Northwestern Beekeepers' Association (held in conjunction with the National convention) on Feb. 18 was attended by 65 beekeepers and the interest was excellent. National officers elected for this year are: F. B. Kindig, East Lansing, Mich., president; A. Sly, Birmingham, Mich., vice-president; Chas. B. Justice, Los Angeles, Calif., secretary; David Running, E. S. Miller, Floyd Markham, Mrs. Cora Polhemus, and Dr. A. C. Baxter, executive committee. Place of meeting next year, Buffalo, N. Y.

## QUESTIONS.—

(1) In working for extracted honey, why are stories tiered up four and more stories high? Why not extract a super when filled, replacing the same with an empty super or a super just extracted? (2) When hives are removed from their cases and placed on their stands in late spring after the bees have begun to fly freely, will there not be a great loss of bees, since they are not only moved from their old place but also faced in a different direction? (3) What is the difference between Langstroth and Hoffman frames, especially as to size? Which is preferable? I understand the Hoffman is the standard (being regularly furnished by the supply houses, Langstroth frames not even being listed). (4) Referring to the hole sometimes used above the entrance, how far above the lower entrance should it be bored? W. E. Reim.

Wisconsin.

Answers.—(1) Some beekeepers extract before the close of the season; but if honey is left on the hive for a time it becomes much riper and better-flavored. If extracted as fast as filled by the bees there would be danger that the honey would be so thin that it might ferment. (2) When removed from their winter cases colonies should be left in the same grouping and the hives facing in the same direction as when in the case. If moved to entirely new locations, as you suggest, there would certainly be drifting; and in order to even up the colonies it would be necessary to equalize the bees, which would certainly be a great deal of trouble. This is the method employed by as good a beekeeper as Ira Bartlett, East Jordan, Mich. Yet we can hardly recommend it, since it is much more simple to prevent the drifting than to remedy the trouble. (3) The Langstroth and Hoffman frames are the same size; but the Hoffman allows for equal spacing by projections on the end-bars. The Hoffman frames are now standard, and are a decided advance over the Langstroth. (4) The hole is usually placed two or three inches above the entrance.

Question.—Can the best New Orleans molasses be used as a feed for bees? A. H. Moore.

New York.

Answer.—Not during the winter, since it would cause dysentery. Tho bees do not take it readily, it may be used safely as soon as the weather becomes warm enough to permit the bees to have several flights each week.

Questions.—(1) Please give me a recipe for making bee candy. (2) Would a cellar where there is running water all the year round, and where the temperature never goes below 40 degrees Fahr., be as good as a cellar where it gets much colder but is dry? Chester Steinbacher.

Pennsylvania.

Answers.—(1) Put granulated sugar in a granite dish and add a little water. Place the dish on the stove and keep stirring until the sugar is all dissolved and the syrup is very thick. Then bring the syrup to a boil

## GLEANED BY ASKING

Iona Fowls

and keep on with the boiling, without stirring, until when you dip your finger in cold water, then into the boiling syrup and immediately back

into cold water again, a thin film of hardened sugar on your finger will just crack when you bend your finger. At this state the syrup should be removed and poured into paper pie plates, placed where they are to stand until cooled, and the syrup poured into them immediately after removing from the fire. Do not scrape the dish when pouring out the syrup. The candy when cool will be hard and transparent. This kind of candy is not wasted as much as a softer candy by parts of it dropping to the floor of the hive, but it is more difficult to make and get just right. (2) Yes, better. If the ventilation is right, that dampness will do little harm.

Question.—I have combs of sealed stores stored in hive bodies where they are exposed to freezing weather. The cappings are bursting, and the honey is dripping. How can I prevent this?

West Virginia.

P. B. Cook.

Answer.—If honey in the comb is allowed to freeze, the wax contracts so that the combs are broken, and the honey runs out. In order to prevent this the honey should be stored in a temperature between 80 and 90 Fahr. Not only will this temperature prevent the combs from breaking, but the honey would be less likely to granulate.

Question.—Will you kindly let me know how to prepare the inside of any tin vessel so that, if melted wax is poured in, it will not stick to the sides when cool, but may be removed.

Pennsylvania.

Chas. Reynders.

Answer.—Hot wax will not stick to clean new tin; but if the vessel is at all dirty, or if there is rust in the cracks or sides, then the wax will stick tightly. In such a case the inside of the vessel should be well soaped, and the soap allowed to dry before the wax is poured into the dish. When cold, the wax will withdraw from the sides and the cake may be easily removed.

Question.—Last summer I accidentally got two queens above the excluders, and at extracting time I found brood in 12 of the extracting-frames. This brood is now decayed. If I use these combs in the spring will there be any danger of disease?

West Virginia.

Joseph McCrickard.

Answer.—There have been in the past a few instances in which a beekeeper has believed that dead brood caused foul brood. However, we think it has been pretty clearly proved that this is not true. Foul brood is caused by the presence of bacilli, either *Bacillus pluton* or *Bacillus larvæ*—the former occurring in European foul brood and the latter in American foul brood. Now, brood may be allowed to decay until it has reached the last stages of decomposition, and still neither of these bacilli be found



when examined microscopically. Altho we feel sure that decayed brood will not cause foul brood, still we believe it would be a very poor plan to give one colony very many of such combs. If given more than one comb apiece, the colony might become discontented and swarm out. More than this, colonies in such condition could not be expected to have the vitality and resistance to disease that a normal colony would. The decayed brood does not cause foul brood, it is probably an excellent medium for its growth.

Question.—Which is better—to take bees right out of the cellar and move them to their location 10 miles away or give them a flight first and then move?

R. A. Schwarzkopf.

Answer.—That will depend to a great extent on the way they are moved. If by auto you could probably move them immediately after taking them from the cellar, with no bad results; but if several hours are to elapse, a flight would be much better before moving, tho we should prefer to give a flight before moving, in any case.

Questions.—(1) Now that the weather is rather warm, and the bees are more active than in the severe weather, is more honey used? (2) Will you kindly tell me if they ought to be fed about the latter part of March and the first part of April? (3) Is the packing to be taken off gradually or all at one time?

Miss Adelyn M. Lindner.

New York.

Answer.—(1) We do not think so—not unless the colony begins brood-rearing, in which case large quantities of honey are consumed. (2) If the colonies were left last fall with 25 or 30 pounds of stores as we advised, they should need no attention before fruit bloom. But if you have reason to believe them short of stores they should be examined on the first day warm enough for flight. If found necessary, a comb of honey or a cake of candy should be given. (3) Some seasons the packing may stay on in your locality as late as the last of May. It should not be removed until settled warm weather, when there will be no danger of chilling the brood.

Questions.—(1) I have 40 or 50 pounds of taffy candy. Would bees make it into honey after they begin to work in the spring? (2) I have one colony that is very cross. The others are not so cross. Can you tell me why they are cross?

Missouri.

S. M. Wickman.

Answer.—(1) Bees are not able to change candy into honey. They do, however, use candy stores. When they store such candy in the combs they simply dilute the candy and store the syrup, and the result is sugar syrup but not honey. We should like to give a word of caution concerning that taffy. Any candy that is the least bit soft should be placed in a dish inside the hive, on top of the brood-frames, covering the frames and dish warmly so that no heat from the cluster can escape. If the candy is placed directly on the frames it is liable to become so warm that it may run down between the frames, and cover the cappings of the brood, in which case the brood and perhaps many bees would be killed. (2) Colonies facing

toward moving objects sometimes are crosser than others; for this reason those located in an apiary destitute of trees or shrubbery have their attention more easily distracted and are sometimes quite cross. But if two colonies with the same environment and same treatment differ in temper, it is probably due to a difference in heredity. In such a case the cross colony should be requeneed.

Questions.—(1) Why do not the manufacturers of foundation make sheets large enough so that when one puts the sheet in the groove of the standard frame it will not leave a space at the bottom between the foundation and bar? My bees seldom fasten the comb at even one place on the bottom-bar in spite of the fact that I wish the comb fastened on four sides, as I believe it insures solid combs for extracting, utilizes a needless waste of space, eliminates drone comb, and improves the general appearance of the comb. (2) On the side of the combs in one of my hives of hybrids I noticed a bluish tint on the cappings of the stores. As I am a beginner I wonder if it is not a sign of insufficient stores. (3) My hives face southeast. Is this the proper direction? Several beekeepers have told me that southwest is better.

George Kissam.

New Jersey.

Answers.—(1) If the sheets of foundation were made as large as the frames they would buckle, and crooked combs would result. For this reason a space is left at the bottom to allow for the stretching of the wax. Many plans have been made for getting the bees to attach the combs to the bottom-bars. Some use vertical splints, and others various ways of wiring. Some have used bottom starters with the ordinary full sheets of foundation; others have inverted the supers until the space was built in; and still others have used side entrances, believing that cold winter drafts at the entrance might be responsible for the undesirable space at the bottom. (2) There is nothing unusual in the color. Cappings over honey are usually white, bluish white, or yellowish in color. (3) Some good beekeepers—such as R. F. Holtermann of Brantford, Canada—pay no attention to the direction of facing; but we believe that, if colonies are to be left outdoors during the winter, they should face away from the prevailing winds, which are usually from the north and the west.

Question.—Would a frame of sealed brood, a frame of honey, and two pounds of bees with laying queen be the thing to start a colony?

Ohio.

Paul Short.

Answer.—Yes, if started in fruit bloom and kept supplied with stores, they ought to build up by July.

ANSWERS BY DR. C. C. MILLER.

Question.—What is the construction of your bottom-board and bottom-rack?

Answer.—The bottom-board is a plain box, two inches deep, open at one end. It is made of six pieces of  $\frac{3}{4}$  stuff; two pieces  $22\frac{1}{2} \times 2$ ; one piece  $12\frac{1}{2} \times 2$ ; and three pieces  $13\frac{3}{4} \times 7\frac{1}{2}$ . To prevent the bees from building down in summer a bottom-rack is used. As material for a rack there are two pieces  $18 \times 1 \times \frac{3}{4}$ , and 21 pieces  $10\frac{1}{2} \times \frac{3}{8} \times$

¾. The little pieces are nailed upon the ¾-inch sides of the two larger pieces, ladder-fashion, with ½-inch space between each two strips. The strips are allowed to project over at each end about an inch. The foregoing bottom-board and bottom-rack are for an 8-frame hive. For a hive of different size the proper changes must be made in some of the measurements.

Question.—Why don't you requeen every year?

Answer.—It may be that under some conditions, and for some beekeepers, it is advisable to requeen every year; but long experience has made me believe that for me, and I think for the great majority of beekeepers, it is better not to requeen on account of age, but only because a better queen may be given. Perhaps I ought to say unless a good deal better queen may be given. So I never requeen merely because a queen is old. One reason for this is that the bees know better than I when a queen should be superseded, and when the time comes that a queen should be superseded, they supersede her, whether she be three months or three years old. I think their superseding nearly always occurs toward fall, and they make a smooth job of it, with no interference in brood-rearing. When I do it, there is more or less interference with their household affairs, with the possibility sometimes of something like disaster. Besides, to requeen a whole apiary is something of a job, which I do not care to undertake without the prospect of material gain. One of the most important things, as I consider, is to breed from the best. But if I requeen every year, I cannot keep tab of a full season's work of each queen, and so I cannot tell which is best. On the whole, if I requeen because of age, I lose more than I gain.

Question.—It is not customary, when tiering up hives, to put the empty super next the brood-chamber, and do you think bees would carry honey to the fourth or fifth story if there was room for it lower down?

Answer.—For some years, when producing comb honey, I always gave the empty super next the brood-chamber, without changing the relative position of the supers above. In a good flow the bees promptly began work on the empty sections, doing more work there than higher up, but still they continued work on the other sections, even tho tiered up six or more high. Toward the close of the harvest, when little honey was coming in, if I put an empty super below, the bees put not a drop of honey in it, merely passing thru it to work above. In either case bees carried honey to the fourth or fifth story when there was room for it lower down. Perhaps you have in mind extracting-combs. If a super of empty combs were given below in a full flow, I should expect more work in it than in the section-super, but still that the bees would continue work in the top story. If given at the wane of the flow, instead of being neglected as was the empty section-super, I should expect it

to have chief attention, with little or nothing done above.

Question.—Referring to my story of the swarm following the wheelbarrow, page 23, this comes: "As to bees hearing, E. R. Root has made the statement repeatedly that hybrid bees would behave as you describe, but that Italians would not. Would this prove that hybrids can hear and that Italians cannot?"

Answer.—I'm unwilling to believe that Italians are deaf, and I wouldn't like to impeach the credibility of the witness. So I prefer to explain it by citing the well-known fact that different kinds of bees do not always act the same under the same conditions.

Question.—How many worker-cells to the square inch?

Answer.—It is usual, and perhaps correct, to estimate 5 worker-cells to the linear inch. Based on this it is common to say there are 25 cells to the square inch, or 50, counting both sides. This would be correct if the cells were square; but they are hexagonal. A little comparison will show that a hexagon a fifth of an inch across does not contain as much surface as a square a fifth of an inch across. So as the hexagon contains a smaller surface there must be more hexagons than squares in a square inch. As a matter of fact, if there are 5 cells to the linear inch, there are 28 13/15 to the square inch, as given by Cheshire, or 57 11/15, counting both sides. So instead of saying 25 and 50 are the numbers for one or both sides, it is a good deal nearer the truth to give the numbers as 29 and 58. The difference is such that a surface containing 1,000 cells, estimated the usual way, will contain 1,155 cells, estimated correctly.

Question.—On page 28 Dr. Miller says that "near the top-bar is the very place where the foundation stretches the most." Do you mean stretches or expands, Doctor? Douglas D. Brearley.

Answer.—English is one of the languages that has always troubled me, and I'm not sure that I know any too well the difference between expanding and stretching. And when I read in the dictionary that to stretch means to be drawn out or expanded, I feel there is danger of failing to make the proper distinction. However, when a piece of beeswax thru the effect of heat becomes larger in dimensions I have no doubt at all would agree that is expansion, and when I pull on a strip of foundation six inches long and make it half an inch longer, I think it stretches. Then when a frame of foundation at 50 degrees is put into a brood-nest and brought up to 90 degrees or more, I feel very sure it expands. Indeed, I feel quite sure of it without any measuring. But when I take it out and find that a cell which upon being put in was an inch from the top-bar is now a quarter of an inch farther down, I think I am not far out of the way in saying it has stretched a quarter of an inch. So while there is, if I am correct, both expansion and stretching, is not the stretching the thing to which the beekeeper objects?



**L**AST month we arranged for the purchase of colonies. This month it will be necessary to decide whether to produce comb honey or extracted; and, having settled this important question, to order our needed supplies.

#### Comb Honey or Extracted.

During the war we urged all our readers to produce extracted rather than comb honey, simply because the world was starving for more sweets, and we knew that more extracted honey could be produced per colony. But now under the changed conditions we would advise all experienced beekeepers who have been producing comb honey in the past to return to their pre-war practice of raising comb honey. We believe there will be good money in it the coming year; and yet this applies only to the experienced beekeeper—not to the beginner. The latter would do well to confine himself entirely to extracted-honey production until he becomes sufficiently skilled to take up the expert work of producing comb honey.

Aside from the extractor, the comb and the extracted-honey outfits do not differ materially in price the first year; and in succeeding years the advantage is all in favor of the extracted-honey outfit; for the same combs in which the bees store honey the first year may be used repeatedly year after year, while the sections in which comb honey is stored must be replaced at considerable cost every season.

Now, comb is made of wax, which is a secretion from certain glands of the bees; and for the production of a pound of wax it is probably necessary for the bees to consume from five to fifteen pounds of honey which might otherwise be sold as surplus. (Surplus is honey which the bees produce in excess of their winter needs.) Therefore, besides the extra cost of supplies the beekeeper loses considerably from the fact that bees run for comb honey are compelled each year to build all the comb in which they store their surplus honey. Such comb would quite likely contain as much as three pounds of wax and might therefore require 15 or more pounds of honey for its construction.

As previously mentioned, comb-honey production requires far more skill in order to produce a good crop, and at the same time keep down swarming. The section boxes are so much smaller than the combs the bees naturally build, that bees do not enter them as readily as they do the large combs used in extracted-honey production. Therefore it is sometimes necessary to use certain inducements to get the bees started in section-supers. Also, the extracted-honey man finds that giving an abundance of room helps greatly in the prevention of swarming, while the comb-honey man is compelled to

## TALKS TO BEGINNERS

By Iona Fowls

keep his colonies more crowded; for otherwise the end of the season will find him with a lot of unfinished sections on his hands. Extracting-combs of

ripe honey one-third or more unsealed will, when extracted, result in first-class honey. Sections one-third sealed must be sold at a low price.

Furthermore, extracted honey may be produced in many localities and in many seasons when comb honey would be an absolute failure; for, in order that any quantity of comb be built, it is necessary that the nights be warm, as it is during the warm nights that most of the wax is secreted and the combs built.

Oftentimes a beginner is able to find a larger beekeeper in his own locality who will be willing to do his extracting for a small sum. We have found that even one cent a pound is a good proposition on both sides. If one prefers the fun of doing his own extracting (and there is a real pleasure in it), he will be able to purchase a two-frame extractor at a moderate price. And this size will be quite large enough for some time to come. And when he later decides to go into the business a little heavier it will, doubtless, be possible to sell the small extractor and purchase a larger one, either new or second-hand.

Our advice, then, to the beginner is to use extracting-combs rather than sections, either producing chunk honey or, preferably, extracted. Because of the troublesome delays that are sure to occur later on, March is none too early to place one's order; and we strongly recommend that the supplies be ordered today.

#### Extracted Honey Outfit.

The smallest practical outfit for extracted-honey production should consist of a complete hive with fixtures and supers—a bee-brush, bee-hat, smoker, hive-tool, queen-excluder, bee-escape board, uncapping-knife, and a honey-extractor. This provides for only one colony of bees. It would be distinctly to the beginner's advantage to double or triple the number of bee-escape boards, queen-excluders, supers, and hives with contained fixtures; for with two or three colonies he would have a chance for comparison, and, we believe, would learn beekeeping much faster.

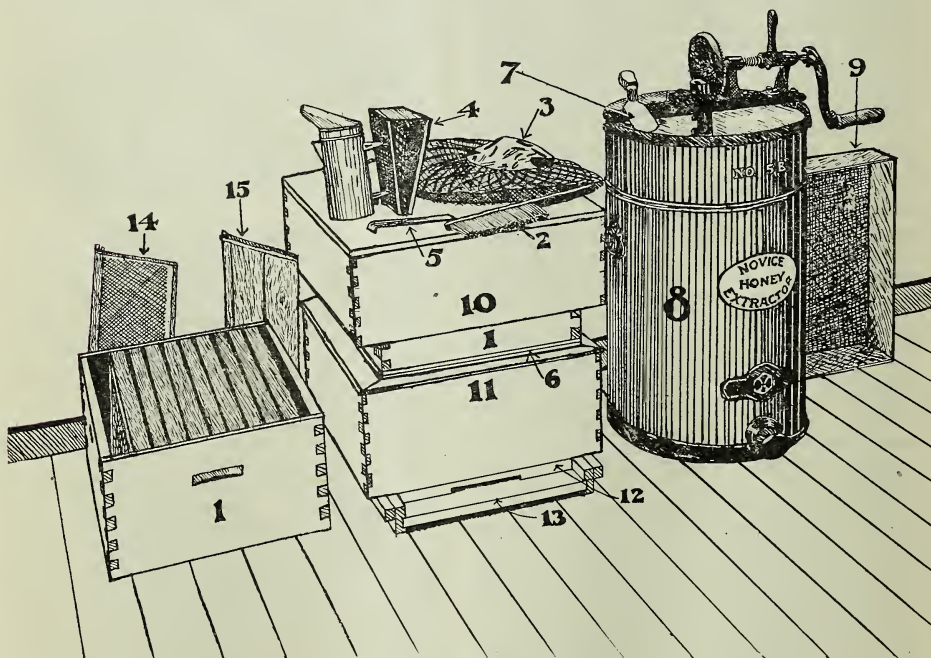
A single-walled hive exactly identical with the deep super may be used, but in this case it will be necessary to provide also a winter packing case if the colony is to be wintered outside. Therefore we consider the double-walled hive much more practical for the beginner, and, accordingly, recommend the double-walled ten-frame hive equipped with ten frames containing full sheets of foundation, metal telescope cover,

inner case, chaff tray, division-board, bottom-board, entrance-closer, two or three deep or four or five shallow supers furnished with frames containing full sheets of foundation. The hive body, or lower story of the hive, rests immediately upon the floor-board which has at the front an entrance-contractor for regulating the size of the entrance. At each upper end of this box or hive is a metal support, or rabbet, holding suspended lengthwise of the body ten movable Langstroth frames  $9\frac{1}{8} \times 17\frac{1}{2}$  inches in size. Inside of these frames, attached to the top-bar by means of wax, and supported by fine wires, are full sheets of foundation, or beeswax stamped with an impression of the natural base and central walls of honey-comb. During the honey flow, or while the bees are being fed, new wax is added to these shallow walls, and the foundation built out into comb for storing honey and raising young bees. Here in this lower hive or lower story, called the brood-chamber, all the young bees are raised, the queen being allowed to lay eggs only in this story. (Exceptions to this statement will be mentioned later.)

As soon as the bees seem to need more room there is placed above the brood-chamber a queen-excluder, which is an arrangement of perforated zinc, or of wire rods, which allows the workers to pass freely back and forth between the lower and the upper chambers, but excludes the queen

from the upper story on account of her larger size. When producing extracted honey this excluder is necessary in order to keep the queen from laying in the supers or upper stories that contain the surplus honey. A few beekeepers allow the queen access to any or all of the supers, but we can not recommend this; for, besides the extra trouble and inconvenience, the practice also results in a poorer grade of honey.

Over the queen-excluder is placed the super filled with frames of foundation. The super is a plain dovetailed box without top or bottom. The inside dimensions may be the same as that of the lower double-walled brood-chamber, or it may be shallower. Some prefer shallow rather than deep supers, as they are lighter and more easily handled, may be put on early in the spring with less loss of heat from the brood, and make it possible to keep separate, in different supers, different flows of honeys varying in color and flavor, such as clover and buckwheat. Some advocate deep supers so that all the frames in the hive will be interchangeable, which is certainly a handy arrangement. Others compromise by having one deep super for each hive and two or three shallow ones. This arrangement makes it possible to give the queen access to two stories when desired, and yet to retain most of the advantages of shallow supers. Over the super is placed a thin inner cover or early in the season, when no super is used,

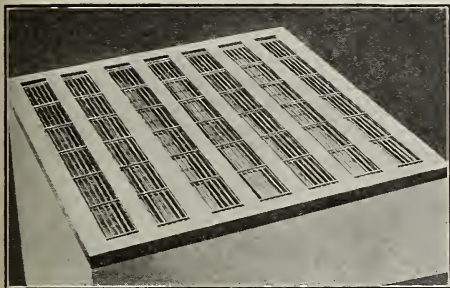


EXTRACTED HONEY OUTFIT

1, Extracted-honey super; 2, bee-brush 3, bee-hat and veil; 4, smoker; 5, hive-tool; 6, queen-excluder; 7, honey-knife; 8, extractor; 9, tray for winter packing; 10, telescope cover; 11, double-walled hive; 12, entrance-closer; 13, bottom-board; 14, frame of foundation; 15, tight-fitting division-board; 16, inner cover over (1) but not shown in cut.



this cover is placed just above the brood-chamber. Above this is the large telescoping cover. The chaff tray, which is to be filled with leaves and placed over the colony during the winter, and the tight-fitting division-board, that is slightly larger than an ordinary frame, but may be suspended in the hive in the same way when contracting the colony for winter, will not be needed during the summer and may be stored away



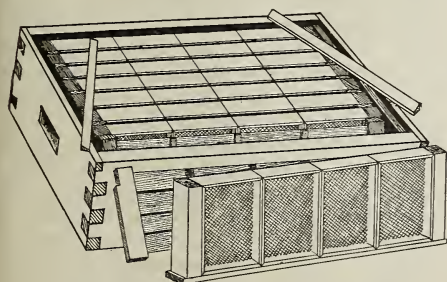
THIS KEEPS THE QUEEN OUT

Queen-excluder (sometimes called honey-board) separating brood-chamber from supers and so preventing queen from going into supers and raising brood in the extracting frames. It is made of alternate strips of thin wood and strips of soldered wires.

until ready to pack the bees for winter. It would hardly pay for the beginner to buy the division-board since he could easily make one himself. It may be of thin wood and should be made to fit the hive tightly so that bees cannot pass beyond it.

#### Comb Honey Outfit.

Those who, in spite of the objections we have pointed out, still wish to produce comb honey, will need the same equipment just



COMB-HONEY SUPER AND SECTIONS.

Deep comb-honey super containing oblong sections, all supplied with full sheets of foundation. Square sections may be used if desired, but the shape here shown is preferred. In the foreground of the illustration is shown a single section-holder, containing the regulation four sections with full sheets of foundation. This holder is set into the super and holds the sections there. Between this single section-holder and the super is shown the end of a section fence or "cleated separator." This fence, or separator, is placed between each row of four sections in each individual section-holder to keep the sides of the combs even and uniform and at the same time give bee-space between the combs.

described except the uncapping-knife, queen-excluder, and extractor. Also, instead of the extracting-supers, four or five comb-honey supers will be needed. These



PARTS OF COMB-HONEY HIVE.

Comb-honey hive, showing single-walled hive of super used as brood-chamber. A double-walled hive should be substituted for this brood-chamber if the colony is to be wintered outdoors and no packing case used. If desired the beginner may make his own hive stand or omit it entirely and substitute bricks or blocks to keep the hive from the ground. should be filled with sections containing full sheets of foundation.

#### Suggestions on Supplies.

Whether one is running for comb or extracted honey, it would be a good plan to have an extra hive to have any possible swarm. One or two extra supers, with included fixtures, would also be a safe precaution. Unless one happens to be a pretty good carpenter the first hive should be purchased nailed and painted (NP). With this for a pattern one may later enjoy nailing up his own supplies, in which case he may purchase somewhat cheaper by buying in the flat or knocked down (KD).

The next issue will deal with the inmates of the hive, describing the development and home life of the various members.

#### Beginners' References in This Issue.

The following articles in this issue of Gleanings will be of especial interest to beginners: "Anne Lester and Daddy Lowe," page 147-148; "How He Began Beekeeping," page 154; second and fifth paragraphs of "Sittings," page 157; "Beekeeping as a Side Line," page 160.

SOME years ago an old farmer living about ten miles away brought us a wagonload of basswood lumber. He was told to take it down to the lumberyard and the foreman would unload it and give him a slip of paper giving the measurements. He directed this man to take the paper up to the office in the factory and get his pay. Well, after receiving the paper he put his hand in his pocket for his spectacles, and then discovered he had left them at home when he changed his clothes. Of course he could have taken the paper so to the office; but it was near night, and he was in a hurry to get home, and so he concluded to keep it until he drew some more lumber. After arriving home, and with the aid of his specs seeing how small the price, as it seemed to him, had been allowed him for the lumber, he came straight back to our factory and declared he would not sell it for any such price—that he would draw it all back home first. But as it was seasoned lumber it had gone to the planer and was used up. Under the circumstances he demanded pay according to his own valuation. In this predicament he came to me with the foreman, and I was to decide. I explained to him that we were buying lumber every day, and the price we allowed him was the same we paid everybody else. I told him we were better prepared to know the value of such lumber than he was. But he was stubborn and contrary. He was a good deal stirred up, and finally gave me a piece of his mind. Among other things he said something like this:

"Mr. Root, we know you pose as a good man, a church member, etc.; but I have heard before that, altho you try to keep your own hands clean, you employ men on purpose to do the dirty work to swindle us unsuspecting farmers."

I remonstrated with him; but he finally gave me a string of abuse something like the opening letter in my Home paper for August. I think I asked him if he was a professing Christian. He admitted he was.



If therefore thou art offering thy gift at the altar, and there rememberest that thy brother hath aught against thee, leave there thy gift before the altar, and go thy way; first be reconciled to thy brother, and then come and offer thy gift.—MATT. 5:23, 24.

If any man would go to law with thee, and take away thy coat, let him have thy cloak also.—MATT. 5:40.

The peace of God, which passeth all understanding, shall guard your hearts and your thoughts in Christ Jesus.—PHIL. 4:7.

I finally interrupted the talk by telling him he would have to excuse me as it was time for our Saturday afternoon prayer meeting. This seemed to stir him up worse than ever. I do not recall whether I invited him to go with me to prayer meeting or not; but I rather think I did not. I hastily got hold of my old Bible and reached the old brick church just as the meeting was being opened. I soon decided that I was in no shape for prayer meeting. It was so long ago that I can not be exact. But either I recalled the first of our texts or I absently opened my Bible, and just then my eye happened to hit the exact place. Did it really *happen*? I can not remember now; but I am sure my little prayer, "Lord, help," must have welled up at about this crisis. I never had noticed the verse before; but that expression about bringing my gift to the altar made it seem just then plain that the prayer meeting was the altar, and whatever I should have to say or suggest (I always take some part in every prayer meeting) would be the gift referred to in the passage. I considered the situation just about a minute; and then leaving my Bible on the chair I rushed out, hoping I might be able to find my irate brother. Now another thing happened right there near that old church—at least most people would say it all "happened." I ran across my irate friend not very far from the church. I put out my hand to him, but he declined to accept it. Then I said something like this:

"My good friend, you said you were going to consult your lawyer."

"Yes, I am now on my way over to his office."

"Well, I will go with you and we will state the case to him; and if he says I should pay you that amount of money under the circumstances I will do it."

His face softened at once, and he replied, "Why, Mr. Root, that certainly will be fair. But don't you want to consult your lawyer?"



"No, my friend. I do not know who your lawyer is; but I will submit the whole matter to him, and abide by his decision."

A good deal to my surprise his lawyer decided against me. But there was nothing to do but to keep my promise. I protested something like this:

"First, our friend neglected to carry his credit slip to the office as he was expected to do and get his money. Second, we were in no way to blame for the fact that he had forgotten his spectacles. Third, he demanded a price away beyond the market value and what we had been paying other people right along for months past."

After our friend had started home the attorney followed me and said something as follows:

"Mr. Root, I know you are a little surprised at my decision but I have known this old gentleman for years. He has tried in his way to lead a Christian life. In fact, he used to preach occasionally years ago. He has been badly used, and he is a little rude and inclined to rush to the conclusion that everybody wants to cheat him. This small amount of money means a great deal more to him than it does to you. But he is headstrong, and probably would not be satisfied with anything else."

All this happened so quickly that I got back to prayer meeting and picked up my Bible, and when opportunity was offered I made something of an apology for rushing out as I did at the beginning of the meeting, and I told them the whole story; and altho I had come back with a few dollars less I had a good conscience, void of offense toward either God or man, and with a better understanding of the precious words of our text than I had ever had before.

My good friends, I hope this little story will help you to get over some of the rough places in life. This old gentleman was a good friend of mine after that until his death. I do not think he ever apologized for his unkind words; but perhaps that was not his way of doing. During this long busy life of mine I can not recall now that I ever had a lawsuit—that is, where I alone was concerned in the matter. At one time, as some of you remember, the beekeepers of our land, and perhaps other lands, were threatened with a monopoly of the one-piece honey-boxes. For the good of the beekeepers I went into an expensive lawsuit, and it was finally carried up to the United States Supreme Court. But this was a matter where the *public good* was at stake.

A friend of mine suggested yesterday

that the beautiful text about loving our enemies and doing good to those who hate us refers unquestionably to personal enemies and not to the enemies of God; and he suggested that in fighting against Germany we might consider Germany as the enemy of God and the enemy of righteousness, if there ever *has been* such an enemy since the world began. The text I have been quoting unquestionably refers to misunderstandings and lawsuits between neighbors. Of course, it may have a larger application to nations. But even the Savior himself, when speaking of upholding the laws of God and the laws of man, said, "I came not to send peace on earth; I came not to send peace, but a sword,"

Just one word more in regard to the concluding text. When I came back to prayer meeting I had a little less money in my pocket; but I had in my heart "the peace of God that passeth all understanding." There are two morals that I should like to impress with the above story—the habit of attending regularly your weekly prayer meeting. At the time of this story our prayer meeting was at 2 o'clock on Saturday afternoon. Let me tell you of one incident of years ago. A stranger came, I think from somewhere down east. He got off the stage at the American house in the center of our town, and asked the landlord how he could manage to get hold of A. I. Root as soon as possible. The landlord answered:

"My friend, if you will sit down in that chair, right there, A. I. Root will go past you inside of five minutes, or perhaps a little more."

The stranger laughingly replied:

"Why, how is it possible you can be so sure that A. I. Root will be here as you say?"

The hotel-keeper, who was not a Christian—in fact, he was a good way from it, I fear, replied:

"It is now just about time for the bell to ring for the prayer meeting over in that old brick church; and Mr. Root is always on hand unless something very unexpected happens. You will see him in just a few minutes coming at a very rapid pace, for he is a very busy man, with his Bible in his hand."

Now, this landlord respected me because of my well-known habit of attending prayer meeting; and had it not been for this prayer-meeting habit of mine I might have had a troublesome lawsuit.

The second moral is the advantage of being in daily touch and contact with God's holy word. If you, my good friends, each

and every one of you, have not a Bible of your own—one you are so familiar with that you can find any precious text you want at a minute's notice, go and get such a Bible, and get in touch with its precious pages.

DIRECTOR C. E. THORNE, OF THE OHIO EXPERIMENT STATION; ALSO SOMETHING IN REGARD TO VEGETARIANISM VERSUS A MIXED DIET.

After Doolittle's death last June I went back to the copies of the old *American Bee Journal* to see when it was that he commenced writing for that publication in regard to bee culture. I made mention of this on page 498, August GLEANINGS. Well, in looking over those old volumes away back in the 60's I was several times surprised to find familiar names; and among them was our good friend Professor Thorne. His first communication was dated Nov. 8, 1868. His residence then was Selma, O.; and from that time on for some years he was more or less a correspondent of the bee journals. And now I recall that in one of his communications not very long ago he made some reference to having been a "bee man" in times gone by. Well, just now I have a letter from him that has given me much thought and study. In fact, the suggestion is not only novel but to me, entirely new. It has given me new light on this matter of animal food as a part of our diet instead of a strictly vegetable diet. Here is the letter:

IS NOT A BRIEF LIFE BETTER THAN NO LIFE AT ALL?

Friend A. I. Root:—I have come to share your reluctance to kill animals, but after all, is not the sum of animal happiness vastly increased by the meat eaters? If we ate no meat hardly one animal would be brought into the world where a thousand are now, and I know of nothing more full of unadulterated happiness than the calf or pig or lamb, destined after a short life for the slaughter, but meanwhile having every want supplied and ignorant of its doom, which finally comes almost or quite painlessly.

By the way, when I get to be Governor of Ohio, I am going to have a law made making it a penitentiary offense to use anything smaller than brevier type.

Yours cordially,

CHAS. E. THORNE.

Wooster, O., June 4, 1918.

The above opens up a new question, and I do not know but it may be applied to humanity as well as domestic animals; in fact, I added the title myself, to friend Thorne's article. Is it not more desirable to have even a short life than to have no life at all? I found a squib in the *Cleveland Plain Dealer* a short time ago, which read something like this:

A certain individual was always grumbling about his aches and pains and vari-

ous misfortunes. A friend of his said to him one bright morning:

"Well, brother Boggs, how do you feel today?"

"Why, I couldn't feel any worse if I were dead."

The above suggested to me the query, "How does a man feel when he is dead?" Of course, I am not raising the question now from the standpoint of the Christian. Let us consider it for a moment from the standpoint of the worldly individual who has no faith in God or anything else. Will he feel *better* when he is *dead*? Does a man who commits suicide really better his condition? He may be relieved from bodily pain and worldly trouble. I suppose the suicide expects annihilation. He is bent on destroying his body, and takes it for granted that the body is all there is of it. God forbid. Professor Thorne's letter above was probably called forth by what I said on page 370 in regard to killing one of my Eglantine pullets in order to have a chicken dinner. If we did not have any chicken dinners, thousands upon thousands of chickens would never have any life at all. Do they enjoy that life? My opinion is, after raising chickens more or less for over 70 years, that chickens when properly cared for are about the happiest creatures on the face of the earth. Before a chick is many hours old it will be cutting up antics, pretending to fight others like itself, etc.; not only chickens but lambs, calves, and all the domestic animals. They enjoy life, even if it is a short one.

Of course all animal kind object to being killed. They make the most frantic efforts to preserve life as long as possible; but who knows that they really suffer? I think some one, who was once in the jaws of a lion, has said that he felt no pain at all when his bones were being crushed. It was only afterward; and I think that some of the poor soldiers in our war have expressed themselves in a like manner. They felt no pain at the time of being wounded. If they had been killed outright is it not *possible* there would have been *no* suffering? I think investigation will show that the nations of the earth that make the most progress, intellectually and every other way, are those that live on a mixed diet.

As I write just now, Oct. 21, the physicians of our land are recommending for the Spanish influenza that the patient take only liquid food and stay in bed, etc. Now, as I take it, this nourishing liquid food or soup is, as a rule, made mostly of meat of some sort. There may be soups made entirely of vegetables that have proved to be



as nourishing, altho I am not sure of it. Both Mrs. Root and I at different times have been near death; and both of us were built up and brought back to health on a diet composed largely of finely ground beefsteak.

In regard to small type in our journal, if we follow our good friend's suggestion, a great lot of valuable matter would have to be left out of *Gleanings* and many other periodicals.

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A LETTER FROM THE A. B. C. F. M. SHAOWU MISSION, EMBRACING THE CITIES, SHAOWU, KUNANG TSEH, TAI NING, KIEN NING, TSIANG LOH, SHUN CHANG, YANG KEO.

The following is an interesting letter to me from a foreign missionary:

Dear Mr. Root:—Recently I was quite interested to see in the *Scientific American* a short paragraph in regard to your success in utilizing wind power for charging automobile batteries. It is an aggravation to see so much power constantly going to waste over our heads and all around us, and be able to utilize so little of it for mechanical purposes; but, just like the power of the sun, it is so diffused.

In a recent copy of the *Literary Digest* was an article, giving opinions pro and con as to the hexagonal shape of the cells in the honeycomb having been produced directly by the bees. I am summing in a little cottage about 3,300 feet above sea level. The walls are of earth tamped down, and are nearly a foot thick; and this gives a space of eight or nine inches between blinds and windows. When we came here July 1 a swarm of bees had settled in one of these spaces; the combs were parallel to the window, and the supply of honey had fallen off just as the comb next to the window was nearly finished. These new cells were every one of them empty and hexagonal with not a sign that any had ever been occupied, or that any had originally been circular. Manifestly, the comb had not been built, one cell at a time; and each little wall had been constructed as a partition between two cells. Of course the walls were straight between the two. The wonder is that all the honeybees the world over have these hexagonal cells. Granting that all these things have come about by evolution, there must be a guiding Intelligence back of it all.

Recently I bought a ream of paper, and had letter heads printed on it as above; and then came word that we were "The Shaowu Mission." Little did we dream of this when we opened the station, Thanksgiving Day, 1876. Present force: five families, four single ladies, myself, four babies, four children, one lady coming—in all, 28 adults, 24 children. The missionaries and their children who, off and on, have lived here during these 46 years, number 52; and 51 of them are still alive. Mrs. Walker lived longer than did her sister who died of the same disease. I can still do a good half-day's work. Truly God has been good to Shaowu.

Some of the children may now be somewhere in France. Our Father keep them safely. Cordially yours,  
J. E. WALKER.

Shaowu, China, Sept. 3, 1918.

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#### GERMAN BEER AND STARVING GERMANY.

America has cut off using grain by the breweries, that we may have food to spare for the starving nations; now before we

respond to Germany's call for help in the food crisis, shall not Germany, in a like manner, give the grain to her starving poor, instead of letting her breweries have it? When I read the clipping below in our daily paper, I gave a loud *Amen!* Cannot you, reader, do the same?

#### UNTIL INDEMNITY IS PAID.

Editor Plain Dealer:—Sir: One of the first items in the peace terms should be absolute prohibition of the manufacture, sale, purchase, or use of alcoholic beverages in any form, until the entire war indemnity is paid in full. (This could be enforced by an army of occupation.) It was a booze-crazed brain that started the conflagration, and a booze-crazed brain only that could have been guilty of such dastardly crimes. The brutes are now begging for bread, while they are using millions of tons of the best breadstuff for making booze. Take it away from them; it will be a severe punishment in itself, but I can see no better way to give to all, from the least to the greatest, a little punishment for the crimes they have directly and indirectly helped to commit. The punishment will be severe, but the world will be better for it, the war indemnity will be paid in half the time, and a brighter light will dawn on the next generation of Germans.

Don't misunderstand me; this is not the only punishment I would favor, but only in addition to a just punishment to be meted out to those from the lowest to the highest, who are personally guilty of any of the crimes committed.

Oberlin, O.

CONSTANT READER.

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#### MILK AND HONEY FROM SWEET CLOVER.

My Dear Brother Root:—December GLEANINGS just arrived today, and, in perusing it this evening, in your department I noticed reports on sweet clover for pasturage. You stated there was nothing said about bees, so I give now my report including the bees.

I bought three colonies of bees late in May, with partly filled supers. One colony had already swarmed. I moved them about a mile to my own place, and let them finish white clover. They weighed 91½ pounds, including weight of sections. Three miles out my son-in-law has a farm which had 13 acres in sweet-clover pasturage. He let the clover get a good start before turning the stock on it, as it was all the pasturage on the farm. Six or seven cows, a number of hogs, and four horses constituted the stock.

Those cows went into the pasturage *thin*, and, as I watched results, I found them gaining. The occupant, Mr. Oldenburg, told me that the quantity of milk was increased, and for the first time he was not having to use any chop feed for the cows. He took pride in showing his cows to the neighbors because of the way they were gaining flesh, and at the end of the season they were in better flesh than many that went to the butchers' pens. I asked Mrs. Oldenburg if she noticed any difference in the flavor of the milk. Her reply was that she and her husband had observed that they never had such nice, sweet milk before, and that the butter was so much firmer and better than usual.

It was getting well along in the season, and white clover was gone, with but little sweet clover in our neighborhood. One night my grandson and I loaded the three colonies in the Ford and transferred them to the farm. In 30 days I went out, brought them home, and weighed up 123 pounds in finished sections. This was early in September. I put in 150 new sections for buckwheat, but on account of bad weather and killing frosts I got only from 80

to 100 pounds. Other bees in the neighborhood also were in working distance—how many colonies I could not say. That field was sowed the summer before with a nurse crop of barley. The stand was not good as we have a soil too sandy for sweet clover to do its best.

In spite of all the pasturing it seeded heavily; but, as I feared to use it as pasturage for another year, I seeded to wheat, and it is looking fine.

I expect that the clover seed will come up in the spring, and after the wheat harvest will make a fine crop of hay or pasturage. A field here at home was sown with mixed seed of different clovers with alfalfa and some sweet clover, the latter making a rank growth, as this soil was well fertilized and had been limed and ashes put on it. From my three colonies I got 300 pounds of comb honey and have them home again well packed for winter, with an abundance of stores for any emergency. I did not do like Billy Sourweed—"trade my bees for the old mule to haul home sugar in two-pound lots," but just kept the bees and used honey. Farmers here are just beginning to take to sweet clover. My 128 pounds was secured just at a time when usually but little honey is coming in, but the stock pruning the clover kept it branching and blooming afresh thru that period of usual shortage.

M. L. BREWER.

906 Main St., Three Rivers, Mich., Dec. 2, 1918.

#### BEE CULTURE IN FLORIDA.

We clip the article below from the *Bradenton Herald*:

Fifty years ago, people thought I had gone crazy on bees. When after a time I announced I had secured a barrel of honey from one colony in *one summer*, some one was kind enough to say he didn't believe I ever saw a whole "barrel of honey." They didn't have honey by the "barrel full" "them days."

Well, during the past season our company filled a single order from the U. S. Government for *ten carloads* of honey. I won't tell you what it amounted to, for the figures might make you dizzy. Florida helped us out in filling the order to the extent of fifty thousand dollars' worth or more.

A few weeks ago I told you Mr. Daniel Abbott, a little east of town, received of us for honey over \$600.00. On visiting him recently I learn it was over \$1,200.00. Please don't accuse me of exaggeration. I think Mr. Abbott started in the spring with only about 60 good strong colonies. He must, therefore, have averaged close to 100 pounds per colony. At 20 cents this would be \$20 per colony on the average. Let me caution you that this past season has been extra good, and friend Abbott has had some years of experience. Said I:

"Friend A., you must have had to hire quite a little help to handle all these tons of honey."

"Help? Not a bit of help. I did it all myself." I think about ten years ago, Mr. Abbott came here an invalid. If you could see him now, chest and neck bare to the Florida sun and wind, you would laugh at any one calling him an "invalid."

A. I. ROOT.

#### CIGARETTES; A TESTIMONIAL FROM A SUFFERER.

I smoke cigarettes, too, but I wish I had never seen them. When I first started I smoked a few. I don't smoke as many as some do, but I smoke three or four packages a week. That is 45 or 60 cents a week wasted for 80 to 100 cigarettes and matches; and then one has to give some away. I am not tight, but it is money wasted. If I run out I do not know what to do. Is it harmful to have a

habit or to be a slave and worship idols? If I smoke a cigarette fast and inhale I can feel it go thru me and tingle to my toes. Sometimes I am dizzy.

Now, please do not tell me I ought to quit. I know that; but put it to a vote and see me help to stop them from making cigarettes and then quit. I just voted dry. I like the taste of liquor, but I keep away from it and vote dry.

Elwood City, Pa.

EDWIN A. WRIGHT.

## Special Notices by A. I. Root

### THE "BEAUTIFUL GROUND" BOOK.

The above is the title of the Reasoner Brothers' catalog for 1919. It seems a recent part of the business of this old-established institution, is to beautify the grounds of homes in Florida and other States, and the artistic pictures, in this book, of such homes, was a "revelation" to me. Of course, they are real photographs, printed on the finest paper and with the best of inks in colors. I have enjoyed visits to this celebrated nursery of tropical and semi-tropical plants, more or less for the past 25 years, and if you can't make the visit, I advise you to send for the 1919 catalog. You will find it an educator as well as a book of reference. Address Royal Palm Nurseries, Oneco, Florida.

### POTATOE GROWING IN OHIO, MICHIGAN, BERMUDA, AND FLORIDA.

For 70 years or more, potatoes have been, more or less, my hobby. My good mother gave me my first lessons, in order to get me interested in outdoor work, that I might "live, and not die." Over 40 years ago I put out my first book, largely written by our lamented friend, T. B. Terry. It was soon translated into several foreign languages. In order to "practice what I preach," I spent a winter on Bermuda Island where they grow such beautiful "spuds," that bring such fancy prices in New York City. I also grew potatoes by the carload in the great potato region of northern Michigan. Recently I have been demonstrating the possibilities of new potatoes for the Northern markets, grown here in Florida in the winter time. Additions and appendices have kept the book well up to date, and the last one was added in November, 1918.

The Editor of *The Florida Grower* says, in issue of Jan. 11, in regard to the book:

One of my best friends in Florida, and in whose friendship I take a great pride, is A. I. Root, editor of GLEANINGS IN BEE CULTURE, who spends his winters in Florida. Mr. Root has mentioned *The Grower* very warmly in his splendid magazine many times, and he is a man who has done much work for Florida by the favorable publicity he has given his chosen location at Bradenton on the Manatee River. Mr. Root is over 70 years old and yet in many ways he is still a young man, taking great interest in his winter garden in Florida and writing many splendid articles about Florida for his paper. He is a devotee of the electric-driven automobile and at his winter home has a windmill arranged so that while his machine is in the garage the mill is generating electricity for his batteries and he is very proud of this innovation and writes to say that he is surprised that we did not mention it in our recent story of Bradenton.

Mr. Root is joint author of a book entitled "A B C of Potato Growing," and in this book appears an appendix relating to his experience with potato growing in Florida. We can offer this 400-page book in paper cover at 50 cents, and I recommend it as a work that should be in the hands of every amateur potato grower, as he will find information contained therein that will prove of considerable value to him. I wish that there were more of the men of Mr. Root's type in Florida, but believe that we are getting them very fast and that in time they will be here and that their influence will be so felt that Florida will be the best and most favorably known State in the Union.

You can order it of The A. I. Root Co., Medina, O., or of *The Florida Grower*, Tampa, Florida.



The Best from Others.—Continued from Page 171.

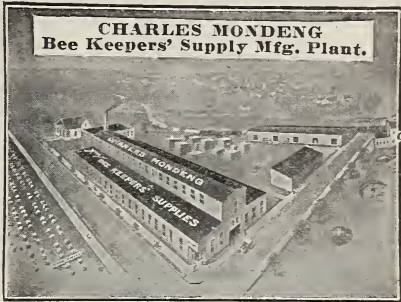
water was obtained from two to twelve months after the death of the colonies, and Mr. Tinsley concludes that the disease organisms probably have little vitality outside of the bee's body, and are probably killed by exposure to the air. Honey from diseased stocks produced no effect when fed to healthy colonies. Other experiments were also tried, but with inconclusive results.

Prevention and Cure.—Mr. Tinsley, however, believes the experiments at this research apiary proved the disease to be highly contagious, and he believes that beekeepers should disinfect hives and appliances in any way connected with the disease. He advises a thoro scraping of the hives, washing with a strong solution of formalin, of fumigating with formalin candle, disinfecting the ground near the hive with chloride of lime, destroying combs of brood, and disinfecting frames and empty combs.

Izal, bacterol, dioxygen, phenol, quinine, formalin, sulphur, milton, flavine, and aperients were all tried on colonies already affected, but none effected a cure. The best results were obtained with a pure culture of *Bacillus Bulgaricus*—an organism that acts as a scavenger of the intestines, and displaces putrefactive and injurious organisms. This culture was mixed with syrup and fed to healthy colonies by spraying. When applied, about one-third of the population was

(Continued on page 193.)

\$30.000 WORTH OF Bee Supplies

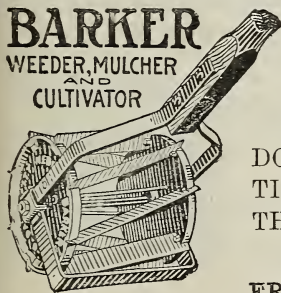


All boxed ready to ship at once; 275,000 Hoffman frames, also Jumbo and Shallow frames, of all kinds, 100 and 200 in a box. Big stock of Sections, and fine polished Dovetailed Hives and Supers. I can give you big bargains. Send for a new price list. I can save you money.

Will Take Beeswax in Trade at Highest Market Price.

Charles Mondeng

146 Newton Ave., N. Minneapolis, Minn.



Weeds and Mulches In One Operation

DOES BETTER WORK THAN A HOE—TEN TIMES AS FAST—SAVES TIME AND LABOR, THE TWO BIG EXPENSE ITEMS—EASY TO OPERATE.

FREE—Illustrated Book and Factory-to-User Offer

We want every garden grower to know just how this marvelous machine will make his work easier and increase his profits. So we have prepared a book showing photographs of it at work and fully describing its principle. Explains how steel blades, revolving against a stationary knife (like a lawn mower) destroy the weeds and at the same time break up the crust and clods and pulverize the surface into a level, moisture-retaining mulch.

"Best Weed Killer Ever Used"

LEAF GUARDS—The Barker gets close to the plants. Cuts runners. Has leaf guards; also easily attached shovels for deeper cultivation—making three garden tools in one.

A boy can use it. Five sizes. Send today for book, free and postpaid.

BARKER  
MFG. CO.  
Dept. 10

DAVID CITY, NEB.

Gentlemen.— Send me  
postpaid your free book and  
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## QUEENS THAT WILL PLEASE QUEENS THAT ARE BRED FOR BUSINESS

They are hardy, long-lived, gentle, and disease-resisting. They are as good as any and far superior to most—bred from imported stock, which produces a bee that is the best in the world for honey-gathering, and are non-swarmers. They are now giving service in nearly every country in the world. Have your order booked now. All that we require is one-fourth cash and balance at shipping time. We guarantee every queen to reach you in first-class condition, to be purely mated, and to give perfect satisfaction, in the U. S. and Canada.

Prices—April 15 to July 1

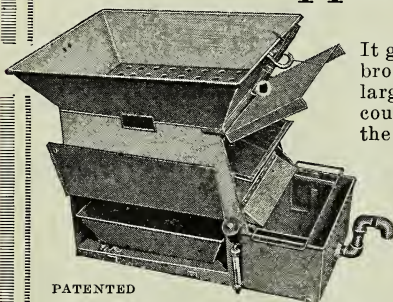
	1	6	12		1	6	12
Untested .....	\$1.25	\$6.50	\$11.50	Tested .....	2.50	13.00	24.50
Selected Untested...	1.50	7.50	13.25	Selected Tested....	4.00	22.00	41.00

L. L. FOREHAND -:- FORT DEPOSIT, ALABAMA

THE GREAT YEAR OF 1919 IS HERE, AND SO IS THE

## Severin Capping Melter & Separator

(COMBINED)



PATENTED

It got a fine start in 1918 from advertisements which brought inquiries and orders from producers in all large honey-producing sections, in this, and other countries. Get the best—it pays in the end, just as the best Extractor does. Saves time, labor, and fuel.

Seeing the great need and demand for these melters, I am better prepared to fill orders than in 1918; but, owing to the great need of copper by the Government, I am limited on supply material, as I use only the best. Handled right, this melter will do the work where others fail.

F. J. Severin -:- Imperial, Calif.

"falcon"

## Your Duty—Do You Know It?

It is to get ready for the coming season and be ready for the first honey flow. This will net you profits. Prepare your bees for a big year and take no chances. Get the best to do with and have the best results.

## Our Duty—Do We Know It?

We get the beekeepers ready for the big season. Supply them with the best of everything with which to work and get the best results. Send us a list of your requirements for quotation. TO DELAY MEANS LOSS TO YOU. "Falcon" service cannot be beat. Catalog and Simplified Beekeeping on request.

W. T. Falconer Manufacturing Company

Falconer, New York

"where the best bee hives come from"

"falcon"



The Best from Others.—Continued from Page 191.

diseased but after two weeks' treatment the disease disappeared. This culture affected the expulsion of the fecal accumulations, and also their nature, causing them to be less solid, and to be light gray in color rather than yellow or brown. This colony thrived during the autumn and winter, and remained alive until early the next spring. While the author does not consider this to be an absolute cure, he believes it will repress and hold the disease in check; and by somewhat varying this treatment it might, perhaps, prove a cure.

**Immune Strains.**—The real remedy, however, he says, lies in producing an immune strain. Some colonies have been found that show considerable immunity. Such resistant strains have been collected and gradually built up into an apiary of considerable size at Kilmarnock. Some of the colonies bred especially for immunity were for a year placed in the heart of a diseased district, but remained free from the disease. In raising immune strains, foreign bees were used largely. Tho not disease-proof, they do not succumb as easily as native strains. Crossing with Dutch, Italian, American, and Punic, increased the vigor and resistance. The best results were obtained from foreign bees, especially small-sized ones, from low wet districts lacking in sunshine. This work of producing immune strains is being continued in the hopes of combating the disease by restocking disease-swept districts.

**BEES** We furnish full colonies of bees in chaff or single-walled hives, nucleus colonies or bees by the pound in season. Prices on application. Ten - oz. screw-capped jars, two gross crates at \$7.50 a gross.

I. J. STRINGHAM, GLEN COVE, N. Y.

## WING'S SEEDS

Stand for big yields. We offer the best that can be grown and can supply you with all standard varieties. Readers of this paper need no introduction to Wing's Alfalfa seed, Corn, or other field seeds. Some of you do not know that our vegetable seeds are as good as our field seeds. Some of you, however, are finding out just how good they are, and as a result our vegetable department has been either doubling, tripling or quadrupling for years.

As an indication of the quality of our seeds, we call your attention to the special premiums won at the Ohio State Fair for two successive years on vegetables grown from our seeds. Part of these premiums are as follows:

General display of vegetables, **First Premium** two successive years.

**BEETS**—Four Firsts, out of five classes in 1918.

**CABBAGE**—Three Firsts, five Seconds and four Third Premiums for 1917 and 1918. **CARROTS**

—1917, two Seconds and one Third; 1918, two Firsts and first on display of all varieties.

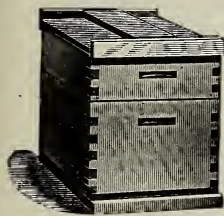
**ONION**—1918, six Firsts and three Seconds on single varieties. First on display of ten varieties.

**TOMATOES**—1915, general display, **First Premium**; 1916, did not show; 1917, ten **First Premiums**, two Seconds and two Thirds; 1918, **First** on display. These exhibitors certainly won on quality, and we have more seed just like they used.

### Write for Free Catalog

It offers all the standard vegetables as well as many novelties which you are unlikely to find elsewhere; also, all the standard flower seeds, plants and bulbs, especially Gladioli, Iris, Peonies and Dahlias as well as field seeds.

**Wing Seed Co., Box 137, Mechanicsburg, Ohio**  
(The House of Quality and Moderate Prices)



## Early-order Discounts will Pay you to Buy Bee Supplies Now

32 years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. . . .  
Write for our illustrated catalog and discounts today.

Leahy Mfg. Co., 95 Sixth St., Higginsville, Missouri

**BANKING  
BY MAIL  
AT 4%**

**WHEREVER** you live you can open a Savings Account by mail with this strong bank. . . .  
Hundreds of people in all parts of the world are availing themselves of the safety and convenience we afford.

Send today for our free booklet "Banking by Mail."

**THE SAVINGS DEPOSIT BANK CO.**

A. T. SPITZER, Pres.

**MEDINA, OHIO**

E. R. ROOT, Vice Pres. E. B. SPITZER, Cash.

# SOUTHERN HEADQUARTERS

## ITALIAN BEES AND QUEENS

1 lb. bees, no queen..... \$2.25  
2 lbs. bees, no queen..... 4.00

For 50 or more, 20c less on each swarm. These go express charges collect, at buyer's risk.

If wanted by Parcel Post add 50c for 1 lb. and 75c for 2 lbs., for guaranteed safe arrival at your postoffice. Shipper reserves right

to demand return of empty cages at his expense.

1 Untested Italian queen..... \$1.25  
12 Untested Italian queens..... 13.25  
50 or more, each..... 1.00  
Tested queen ..... 2.00

No disease has even been in my vicinity.

W. D. ACHORD    :-    :-    FITZPATRICK, ALABAMA

# THE DOMESTIC BEEKEEPER

## BARGAIN WEEK

**I**UTCHINSON once told the writer than it cost him two dollars to secure a new subscriber for the *Review*, the name now being changed to the *Domestic Beekeeper*. This meant that he paid out large sums for advertising, circulars, postage, and clerical help, all of which cost him good money. The thought occurred to Townsend, the present owner of the *Domestic Beekeeper*, why not give this extra money to the subscriber, instead of paying it out as mentioned above, and we have decided to do this very thing. Listen: the week beginning Monday, March 10th and ending March 15th, will be bargain week for new subscribers to the *Domestic Beekeeper*. During this week and

### THIS WEEK ONLY

after which the price will go back to the original price of a dollar a year, we will accept 50c for a full year's subscription to the *Domestic Beekeeper*. A post office money order for 50c will cost but 3c, or a check will do, and be sure your order bears one of the following dates: March 10th, 11th, 12th, 13th, 14th, or 15th; six days only, other dates the regular dollar-a-year price will be strictly adhered to.

It is customary for business houses to have bargain days, at which time they secure new customers, and why not a bee journal have bargain days to secure new subscribers? Remember this is the first bargain days ever offered by a bee journal, and may be the last, so we would suggest that all you producers who have been thinking of subscribing for the *Domestic Beekeeper*, take advantage of those liberal terms and get a full year's trial subscription to the *Domestic Beekeeper* at half-price. Remember that a postal order for fifty cents will pay your subscription to the *Domestic Beekeeper* a full year, providing you order it March 10th, 11th, 12th, 13th, 14th, or 15th. No other dates will do, for immediately following this bargain week, the price of the *Domestic Beekeeper* will be a full dollar a year, the regular price.

The *Domestic Beekeeper* has a department that sells subscribers' honey for much more money than the large buyers will pay. This department is free to all paid-in-advance subscribers. Then we buy beekeepers' supplies for our subscribers, at much below catalog price. A trial subscription will convince you that you cannot very well get along without the *Domestic Beekeeper*.

REMEMBER THE DATE, MARCH TENTH TO MARCH FIFTEENTH, INCLUSIVE, AND LET THE FIFTY CENTS COME ALONG TO

The Domestic Beekeeper, Northstar, Mich.



Our Food Page—Continued from page 159.

and let soak over night. In the morning put over the fire, bring to a boil, and remove from the fire and cool. Repeat this, bring to a boil the third time, and simmer until the fruit is tender, which will be in a short time as the previous soaking and cooking have softened it. Weigh, and for every pound of fruit pulp add  $\frac{3}{4}$  pound of white honey. Return to the fire and cook until it will drip from the side of a spoon in two or more rows of drops, when it may be poured into sterilized glasses and sealed with melted paraffin. After the honey is added it must be carefully watched and stirred to prevent darkening. If light honey is used and the directions are carefully followed, the resulting marmalade will be light yellow in color, tender, and will keep its shape when turned out of the glass. Half sugar may be used with good results.

GRAPEFRUIT MARMALADE.

- |              |                |
|--------------|----------------|
| 1 grapefruit | 1 lemon        |
| 1 orange     | honey or sugar |
|              | water          |

Select fruit with a fine-grained, thin skin, if possible, and then proceed the same as when making the orange marmalade.

ORANGE SALAD.

- |         |                |
|---------|----------------|
| oranges | lettuce leaves |
| nuts    | whipped cream  |
|         | salad dressing |

Separate the required number of oranges into sections and cut the sections in halves crosswise with a sharp knife. Arrange the half-sections on crisp lettuce leaves to simulate the petals of a flower with a spoonful of salad dressing in the center. Sweeten the salad dressing, either boiled or mayonnaise, with honey and add whipped cream to taste. Chopped nuts may be sprinkled on the centers of the flowers.

ORANGE CUP.

- |                     |                          |
|---------------------|--------------------------|
| 4 slices pineapple. | 1 tablespoon lemon juice |
| 2 bananas           | shredded cocoanut        |
| 3 oranges           | honey                    |

Cut the fruit into cubes, add the lemon juice, sweeten to taste with honey, arrange in sherbet glasses, and sprinkle shredded cocoanut over the top. By cutting the oranges in halves and carefully removing the pulp you may make cups to use instead of the sherbet glasses.

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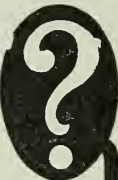
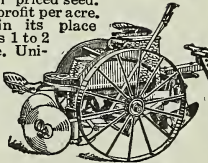
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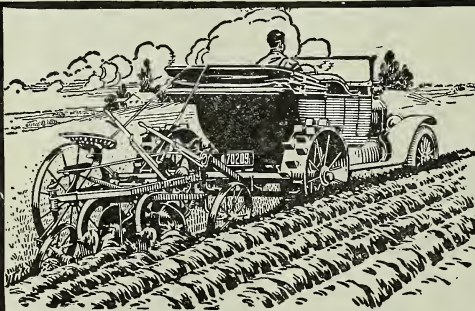
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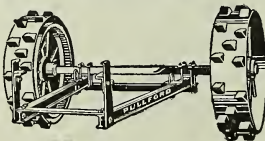
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